

The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

VOL. XV. No. 388

DECEMBER 4, 1926

Prepaid Annual Subscription:
United Kingdom, £1.1.0; Abroad, £1.6.0.

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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

The prepaid subscription to THE CHEMICAL AGE is 21s. per annum for the United Kingdom, and 26s. abroad. Cheques, Money Orders and Postal Orders should be made payable to Benn Brothers, Ltd.

Editorial and General Offices: Bouverie House, 154, Fleet Street, London, E.C.4.

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Synthetic and By-product Ammonia

It is clear from the annual report of the British Sulphate of Ammonia Federation—a document of great authority, information, and interest—that although the manufacturer of by-product ammonia has serious difficulties to face from the development of the synthetic industry, the British producer of synthetic nitrogen has also something to consider in the continued enormous development of the German synthetic industry. It is a little startling to hear that, in spite of the remarkable progress made in this country, Germany is now turning out during every two months more than the total annual production of nitrogen in the United Kingdom prior to the coal stoppage. Germany's annual production accounts for 66 per cent. of the world's output of nitrogen other than Chilean nitrate of soda. Moreover, while the consumption of synthetic forms of nitrogen continues to increase, the increase is obtained at the cost of a heavy reduction in price. Concurrently with this, indeed, as a natural consequence, by-product sulphate prices have declined about 10 per cent. in 1925-26 as compared with the previous year.

It is not, therefore, surprising to find the Federation, which represents both synthetic and by-product interests, frankly recognising that "the prospect

before the producer of by-product sulphate of ammonia is not bright." It is clear, as the Federation points out, that, while synthetic producers expect to be able to effect further considerable reductions in selling price as the result of economies in working, no substantial decrease in the cost of converting by-product ammonia into sulphate of ammonia can be expected, if present methods of production continue to be used. Perhaps it would be well to give the case in the deliberate words of the Federation itself:—

"The uniform product of the synthetic works, with its white colour and large crystal, is making the sale of by-product sulphate of ammonia, with its varying colour and condition, more difficult, and a fresh menace is at the same time arising in the shape of the new compound fertilisers made at the synthetic nitrogen works from raw phosphate and air nitrogen. For these compounds, containing 52 per cent. of water-soluble phosphoric acid and 20 per cent. of nitrogen, seem destined to deal a severe blow at the superphosphate industry, and the superphosphate manufacturer is at present one of the chief absorbers of by-product sulphate of ammonia for his compounds. Some drastic alteration in present methods of turning to account the ammonia obtained at by-product works seems necessary, if by-product ammonia is not in future to represent a charge rather than an item of revenue in the accounts. Concentration of production at a few large works, so as to secure economy in working and the possibility of using a cheaper acid radicle than sulphuric acid, should lead to reduction of costs and greater uniformity of product, but many formidable technical difficulties stand in the way of the realisation of such a plan."

As the matter stands, the position defined in the above passage can hardly be challenged. But it will be noticed that the conclusions are conditional, and the future will depend on whether the by-product manufacturer determines to change the conditions in favour of his own process. Will he, for example, give the intensive attention to the technique of production to effect the necessary improvements in quality and shape, and if his research and experiment point the right way will he incur the cost of reconstructing or remodelling his plant and process? Will he succeed in finding the "cheaper acid radicle than sulphuric acid"? Will he organise concentrated production at a few large works on the familiar principle of the modern jam factory—the crude material being sent up from the small works to a central works where it is worked up into satisfactory final products? All these are problems to be decided by the by-product ammonia makers themselves, and the solution must require considerable cost and thought. Possibly, in a future issue, we may have something to say from the point of view of the by-product manufacturer who seriously intends to maintain his place.

Coal Tar Disinfectants

Of the several papers presented to the conference on tar at Manchester last week, that by Mr. A. C. Tait was of peculiar importance. It was not intended so much for experts as for the tar distiller who from time to time has demands made upon him for coal tar disinfectants. Formerly the manufacture of disinfectants by tar distillers was not always the subject of careful control, and the characteristics of the products varied not only in point of their bactericidal value but also in respect of their emulsifying properties. It is known that some of these disinfectants were incapable of complete emulsification, and that, on standing, a residue of crude naphthalene would develop. Even to-day Mr. Tait urges that "a little time spent in experimental laboratory work would be more than justified by the production of better and more efficient fluids." If a high bactericidal efficiency is to be secured, there must be careful selection of the most suitable tar acids, as well as scientific blending. The xylenols are to be recommended from a bactericidal point of view, although the cresols, and even the phenols, can be employed. For some time the comparative insolubility of the usual constituents of coal tar disinfectants retarded their extended use, but the introduction of creolin was the precursor of other similar fluids.

On the subject of methods of emulsifying the various constituents of miscible fluids, Mr. Tait's observations are apposite. A good disinfectant, he suggests, should form an emulsion sufficiently fine to show the Brownian movement, and it should contain sufficient phenolic compounds to have a reasonably high coefficient. That blending and saponification are the most important factors in the production of a satisfactory preparation is revealed by the fact that whereas individually the constituents may show certain carbolic coefficients, the finished product may have a higher or lower coefficient than the average of the phenolic or allied substances present. Better emulsions can be secured by replacing part of the resin with oil soaps. This has been known for some time. Mr. Tait proceeds a stage further, and affirms that for the fluids of highest coefficient it is preferable to use a potash castor oil soap and to dispense with resin altogether. Those who are concerned with the manufacture of sheep dips will find the paper of value, no less than those who are interested in comparing the efficiency of disinfectants in relation to that of phenol, involving the determination of their bactericidal powers.

Growth of the Flotation Process

SOME idea of the growth of the flotation process is conveyed by the statement that the total quantity of ore reported to the U.S.A. Bureau of Mines as being treated by flotation in 1925 was 45,490,331 tons, from which 2,790,526 tons of concentrates were obtained. Returns were received from operators whose output represents probably 98 or 99 per cent. of the total amount of ores treated by the flotation process in the United States. The quantity of reagents consumed was 81,666,967 lb. Sulphuric acid, of which 40,028,170 lb. was used, was the most popular reagent. Large quantities of reconstructed oils, sodium, and barium sulphide and calcium polysulphide, pine oil, xanthate,

lime, refined coal tar oils, hardwood creosotes, soda ash, copper sulphate, and zinc sulphate were also used. According to Mr. Thomas Varley, one of the Bureau metallurgists, flotation has developed rapidly and is on a more scientific basis than ever before. Perhaps more fundamental and useful data have been revealed during the past two years than in all the years the art has been practised. The Bureau of Mines, in co-operation with the Department of Metallurgical Research, University of Utah, has followed a definite programme on flotation fundamentals based on the use of pure minerals—pure gangue materials and soluble constituents common in ores. Co-operative work between the Bureau and a commercial chemical concern has also made known for the first time the definite and positive action of certain chemicals on the surfaces of various sulphide minerals. Cyanide compounds alone and in conjunction with other chemicals have been studied. The work has had a ready application in flotation plants.

Advances in Flotation Technique

IN past years flotation has been referred to generally as "oil flotation"; to-day it might be more properly called "chemical flotation." Minerals can be floated to-day without oil. Chemicals alone will do the work, showing how little was truly known formerly about the process. The term "reagents" as used by the Bureau includes both chemicals and oils. Another outstanding feature regarding the use of flotation reagents is the radical drop in "lb. per ton" of reagent used in 1925 as against 1924. The figure for 1923 was 4·2680 lb. of total reagents per ton of ore treated, for 1924 it was 3·9618 lb., and for 1925 it was 1·7952 lb. The principal reason for this decrease in amount required to treat a ton of ore is that crude oils, heavy oils, and acids have practically been eliminated. Smaller amounts of refined coal-tar oils, wood creosotes, pine oils, and some reconstructed oils constitute the greater bulk of oils used—these being used principally as frothers, and in small amounts averaging very close to 0·07 lb. per ton of ore treated. Chemicals, many under trade names such as xanthate, T & T (a mixture of orthotoluidine and thiocarbonyl), X-Y mixtures, and others, are generally used. For differential flotation cyanide, zinc sulphate, copper sulphate, etc., are largely used as either depressing or accelerating reagents. In order to counteract objectionable soluble materials present either in the ore or in the mill water, modifying reagents are used to "condition the pulp" and by neutralisation prevent interference of such soluble materials. Reagents of this type include soda ash, sodium silicate, sodium sulphite, crude soda, lime, and acids. In this connection, lime is generally regarded as a "chemical," on account of its action on the minerals, and its reactions with acidic solutions or soluble salts in the ore.

The year 1925 saw the passing from acid to alkaline circuits. Chemical flotation agents and conditioning agents have proved far more effective when used in alkaline pulps. Lime, as compared with acid, is much cheaper, and can be handled and stored much more easily and safely than acid. Nearly all large American operators have their own lime plants, and several are

manufacturing their own reagents. The relative floatability under a standard set of conditions has been determined for most sulphide minerals, as well as for some of the more common gangue constituents such as silica, siliceous materials free from mineral, calcite, limestone, and others. Chemicals seem to have a positive action on minerals, in fact, a different action on each, and it is this fact that is taken advantage of in differential flotation work. Different oils have a slightly different action on the flotation of different minerals and thus assist the chemicals. The ratio of concentration in flotation is comparatively high because high-grade products are constantly being obtained more free from undesirable minerals and gangue than formerly. In 1925, an average concentration ratio of 16.301 tons of ore into 1 ton of concentrates was attained. This ratio is much less than that for the 1924 figures, which was 19.626 to 1, and is lower than that for 1923, which was 17.730 to 1. The low average ratio for 1925 is partly due to the increased tonnage of lead-zinc-iron ores treated. Some of these ores are more than 50 per cent. mineral, and by the removal of three concentrates—namely, lead, zinc, and iron products—the concentration ratio is reduced materially. Copper ores, of which 46,175,198 tons were treated by flotation in 1925, constituted the great bulk of ore so treated. Detailed information in regard to the consumption of reagents used in flotation in 1925 is contained in Serial 2777, copies of which may be obtained from the Bureau of Mines, Department of Commerce, Washington, D.C.

The Methanol Situation

THE United States Tariff Commission has once more been troubled with the question of the competition of German methanol in the American fuel market, and a revised report was, a short time ago, submitted to President Coolidge. According to the case of the National Wood Chemical Association, which is composed of producers and refiners of methanol, even if the maximum increase of duty permitted under the flexible provisions of the Fordney-McCumber Act were granted, the resultant duty would not be sufficient by more than 10 cents per gallon to equalise the difference in the cost of production as between the United States and Germany. It was stated that the German producers had been placing on the New York City market wood alcohol, or methanol, at 45 cents per gallon, as compared with a domestic cost of about 74 cents. It was declared that the present position was hopeless, and that the industry would have to undertake the production of synthetic wood alcohol in place of the wood distillation industry. As a result of these representations, President Coolidge has increased the tariff on methanol from 12 to 18 cents per gallon, the maximum legally possible. It may be noted that imports of methanol into the United States increased from 48 gallons in 1924 to 508,000 gallons in 1925.

Books Received

- EXPLOSIVE REACTIONS IN GASEOUS MEDIA. A general discussion held by the Faraday Society, June, 1926. London: The Faraday Society. Pp. 120. 10s.
- PRINCIPLES OF GENERAL CHEMISTRY. By Stuart R. Brinkley. London and New York: Macmillan and Co., Ltd. Pp. 478. 15s.
- THE "EXPRESS" METRIC QUOTATION RECKONER. By J. Gall Inglis. London: Gall and Inglis. Pp. 96. 2s. 6d.

LABORATORY MANUAL ARRANGED TO ACCOMPANY "PRINCIPLES OF GENERAL CHEMISTRY." By Stuart R. Brinkley and Erwin B. Keisley. London and New York: Macmillan and Co., Ltd. Pp. 160. 6s. 6d.

THE ANODIC OXIDATION OF ALUMINIUM AND ITS ALLOYS AS A PROTECTION AGAINST CORROSION. Department of Scientific and Industrial Research. London: H.M. Stationery Office. Pp. 40. 1s. 3d.

CASEIN, ITS PREPARATION, CHEMISTRY AND TECHNICAL UTILISATION. By E. L. Taque. London, Bombay, Sydney: Constable and Co., Ltd. Pp. 218. 17s.

The Calendar

Dec.		
6	Institution of the Rubber Industry (London Section): "British and American Machine Practice."	Engineers' Club, Coventry Street, London, W.I.
6	Society of Chemical Industry (London Section): "Some Scientific Problems Confronting the Leather Industry." Dr. R. H. Pickard.	Burlington House, Piccadilly, London.
6	Institute of Chemistry (Manchester Section): Address by the Chairman, Dr. Herbert Levinstein.	Manchester.
6	Institute of Chemistry (Leeds Area Section): "Registration of Chemists." F. Scholefield.	Leeds.
6	University of Birmingham Chemical Society: "Combustion, Flame and Explosion." G. G. Anderson.	University, Birmingham.
6	Society of Chemical Industry (South Wales Section).	Engineers' Institute, Cardiff.
7	Institute of Metals (N.E. Coast Section): "Foundry Work." A. Logan. 7.30 p.m.	Armstrong College, Newcastle-on-Tyne.
7	Institute of Chemistry and Society of Chemical Industry: "Vitamins in their Relation to Industry." F. H. Carr. 7.30 p.m.	36, York Place, Edinburgh.
8	Fifth Ramsay Chemical Dinner. 6.30 p.m.	Grosvenor Restaurant, Glasgow.
8	Society of Chemical Industry (Glasgow Section): "Insulin." F. H. Carr. 3 p.m.	Royal Technical College, Glasgow.
8	Society of Chemical Industry and Institute of Chemistry (South Wales Sections).	Technical College, Mount Pleasant, Swansea.
8	Society of Dyers and Colourists (Midlands Section). Joint meeting with the Society of Chemical Industry: "Present and Future Methods for the Valuation of Dye-stuffs." 7.30 p.m.	University College, Nottingham.
8, 9 & 10	Institution of Chemical Engineers: Conference.	The Science Museum, London.
9	Optical Society: Ordinary Meeting. 7.30 p.m.	Imperial College.
9	Oil and Colour Chemists' Association: "Painting Defects—Their Cause and Cure."	Painters' Hall, London.
9	Institute of Chemistry (Liverpool and N.W. Section).	St. George's Restaurant, Liverpool.
9	Institute of Metals (London Section): Joint meeting with the Institute of British Foundrymen: "Contraction and Alloy Casting." 7.30 p.m.	83, Pall Mall, London, S.W.1.
10	Institute of Metals (Sheffield Section): "The Conductivity of Silver Plating Solutions." A. E. Nicol. 7.30 p.m.	University, Sheffield.
10	Institute of Metals (Swansea Section): "The Application of Metallographic Methods to Coal." C. A. Seyler. 7.15 p.m.	University College, Singleton Park, Swansea.
10	Society of Dyers and Colourists (London Section): "Some General Conceptions on the Technical Application of Paint and Allied Products, regarded mainly from the Physical Standpoint." A. de Waele.	London.
10	Oil and Colour Chemists' Association (Manchester Section): "Modern Industrial Chemistry." R. S. Horsfall.	Manchester.
10	West Cumberland Society of Chemists and Engineers: "Modern Gas Works Practice." R. Douglas.	Workington.

Tar Production and its Development

Summary of Manchester Papers and Discussions

On Friday, November 26, a "Conference on Tar," under the joint auspices of the Society of Chemical Industry, the Institution of Gas Engineers, and the Coke Oven Managers' Association, was held at the College of Technology, Manchester. The conference took place in connection with the National Coal Products, Chemical and Engineering Exhibition held in Manchester. The chair was taken at the morning session by Professor A. Smithells, F.R.S., chairman of the Fuel Section of the Society, in the afternoon by Alderman T. Glover, past-president of the Institution of Gas Engineers, and in the evening by Mr. E. Escott-Wood, president of the Coke Oven Managers' Association. We give below a summary of the papers read and of the discussions which followed.

MR. L. GUY RADCLIFFE presided at the opening of the proceedings, when the Right Honourable the Lord Mayor of Manchester, Alderman J. H. Swales, welcomed the conference to the city. Among those present were Mr. F. H. Carr, Sir Arthur Duckham, Mr. E. Escott-Wood, Alderman T. Glover, Alderman F. West, Professors Smithells, Dempster-Smith, and Cobb, Drs. G. T. Morgan, H. Levinstein, T. H. Butler, G. Weyman, and E. W. Smith, and Messrs. E. D. Simon, C. P. Finn, W. Newbigging, R. H. Clayton, N. T. Williams, S. McEwen, W. A. Woodson, W. H. Colman, H. James, W. J. U. Woolcock, E. V. Evans, A. H. Middleton, P. B. Nicholson, F. H. Rogers, W. H. Roberts, W. J. Smith, C. M. Croft, W. Newton Drew, H. Dumbleton, R. E. Gibson, T. B. Smith, and J. C. Walker. In opening the conference Mr. Radcliffe renewed the suggestion made a few years ago that the Institution of Gas Engineers should establish in Manchester a central laboratory, with a trained staff of chemists, for research and advice on problems of immediate and paramount interest to gas engineers.

Tar and Oils from Coal

The first paper at the conference was "A Study of the Tars and Oils Produced from Coal—Part II," by F. S. Sinnatt, J. G. King, and W. H. Linnell, of the Fuel Research Board. They stated that the main object of the paper was to put on record the present stage of the investigations in which they were directly interested. These investigations consisted broadly of the determination of the effect on the composition of low-temperature tar of the nature of the process of carbonisation and of the coal used. Low-temperature carbonisation was so much in its infancy that it must not be overlooked that the tars which were at present being examined were not necessarily of the type which would ultimately be available in bulk.

The investigations of which the preliminary stages were described in this paper had for their main objects the examination of the effect of the chief variables on the composition of tar and the determination of the best methods of utilisation of the tar and of products which might be obtainable from it. The chief factors were: (1) The influence on the tar of the temperature of carbonisation of each of the types of British bituminous coal; (2) The influence of the type of retorting system on the tar produced from the same coals or types of coal. The first step consisted in the examination of the tars from a typical bituminous coal at the range of temperatures implied by the term "low temperature" as applied to the carbonisation of coal. This range of temperature was assumed to be between 400° and 700°. The system of carbonising adopted was that of the external heating of stationary coal as representing the conditions more commonly prevailing in plants designed to produce lump smokeless fuel. The plant used was the intermediate-scale unit which had been adopted at the Fuel Research Station for intermediate-scale work on the valuation of coal.

Analysis of the coal yielded the following results:—

Proximate (air-dry).—Moisture, 3.4 per cent.; volatile matter (less moisture), 32.8 per cent.; fixed carbon, 59.7 per cent.; ash, 4.1 per cent.

Ultimate (dry).—Ash, 4.20 per cent.; carbon, 81.70 per cent.; hydrogen, 5.07 per cent.; sulphur (comb.), 0.92 per cent.; nitrogen, 1.56 per cent.; difference (oxygen and errors), 6.55 per cent. Total sulphur, 0.96 per cent.

Gray-King carbonisation assay at 600°. Yields per 100 g. of dry coal.—Coke, 74.8 g.; tar, 12.0 g.; liquor, 5.0 g.; gas, 8.2 g. Gas (at 60° F. and 30 in. satd.), 10.375 c.c.; density, 0.65 (air=1).

Calculated yields per ton of dry coal.—Coke, 14.96 cwt.; tar, 27.0 gals.; liquor, 11.2 gals.; gas at 60° F. and 30 in. satd.,

3,720 cub. ft. The coke was dull grey, slightly shrunk and dense, coherent and strong.

Results and Conclusions

The conclusions which could be drawn from the yields at various temperatures were: (1) The yield of tar increased to a maximum at 550°, and then decreased steadily. The yield at this temperature was 17.65 gals. per ton of coal, and 67.7 per cent. of that obtained in the Gray-King assay; (2) The net yield of aqueous distillate, excluding that derived from the moisture contained in the coal, increased at first and then remained approximately constant; (3) The specific gravity of the tar increased steadily with increasing temperature of carbonisation, but above 550° the increase appeared to be accelerated. There appeared to be definite evidence of the fact that an external carbonising temperature of 550° was a critical one in the carbonisation of this coal. Though it could be said that the products obtained up to this point were "primary" ones, there was reason to believe that above 550° secondary decomposition began with the effect of increasing the gas yield at the expense of the tar, the latter becoming denser and more viscous.

Work carried out by the authors on the hydrogenation of coal had not reached the stage where any complete results could be published. The experiments in the small-scale plant had continued and the results made it quite certain that from 50 to 60 per cent. of our average British bituminous coal could be converted into liquid hydrocarbons, while about 15–20 per cent. was converted into gas and about 10 per cent. of solid matter remained as a residue.

Work of the Chemical Research Laboratory

In the discussion which followed the above paper, Professor G. T. Morgan said that at the Chemical Research Laboratory at Teddington work had been in progress for about ten months. The purely chemical side was carried out by Dr. Platt and the biological side by Dr. Barnes. Attention had been given to the major and minor constituents of low-temperature tars, and for material they were furnished with tar distillates made from pedigree coal. So far the work had been confined to the higher fractions of the oils derived from those tars. With reference to the major constituents, the phenolic substances were evidently very complicated because in addition to cresols and xylenols there were phenols of unknown constitution which had still to be unravelled. Some work had been done on the germicidal power of those substances. The minor constituents were not without interest. In those highest fractions of the oils from low-temperature tar—whether the tar had been distilled originally at 600° or 450° C.—there was present a very appreciable amount of waxes. It was rather difficult to say definitely what those substances were, as the result of ultimate analysis; but by co-operation with the National Physical Laboratory in X-ray examination they were entitled to say that the wax which melted round about 60° could be fractionated into at least three, if not more, other waxes. Another worker in the laboratory was endeavouring to synthesise those waxes from fatty acids of known composition.

Accompanying these waxes, in the highest fractions of the oil in the low-temperature tar, were some very remarkable substances, remarkable because of their high colour. They were probably complex hydrocarbons. Even in the impure state they were highly coloured, ranging from yellow to orange, and some of the orange substances had a distinctly metallic lustre. Anthracene was present. Dr. Pratt had identified that substance definitely. He also thought it extremely likely there might be naphthalene, but they had not found phenanthrene so far. Perhaps naphthalene and

phenanthrene were the products of high temperature tar rather than of low temperature tar. In addition, there were several highly coloured hydrocarbons, very complex in constitution, about which he could not say anything at the moment.

Further Discussion

Mr. H. G. Shatwell (Anglo-Persian Oil Co.) said the paper presented by Mr. Sinnatt and Dr. King suggested that low-temperature tars might be used as cracking stocks, and, if they were treated by suitable means of cracking, there might be produced from them substantial quantities of motor spirit. He referred in this connection to the work of the American fuel technologists Morell and Egloff. In a paper published last year by Mr. Sinnatt and Dr. King he believed they gave the content of phenol in hydrogenated coal, *i.e.*, Berginised coal-oil, as 2 per cent. He thought that that figure should be 20. Two Germans had hydrogenated coal and they had obtained an oil fraction which contained 22 per cent. of phenol. In both cracking and hydrogenation the phenols were the *bête noire*. One could not crack phenols to hydrocarbons.

Dr. W. B. Davidson drew attention to the unsatisfactory nature of the Gray-King test for tars. In his own experience with low temperature carbonisation when a new coal had to be evaluated he applied a test carried out with a much larger apparatus which gave sufficient tar to enable a distillation test to be made. That test agreed much more closely with the works test carried out on a large scale. He congratulated the technical heads of the Fuel Research Department, if they had been successful in bringing out a vertical retort which would satisfactorily produce a smokeless fuel in a uniform way and at a proper rate of speed. That had been sought for a long time.

Mr. P. C. Pope pointed out that Mr. Sinnatt and Dr. King got 16.7 gallons of dry tar from a ton of Dalton Main coal. That seemed to him a low yield. At Barnsley using the Parker Retort they got a yield of 19.14 gallons per ton. He thought the difference was due to the fact that the Parker Retort was entirely filled with coal and the velocity of the gas travelling through the retort was considerably higher than in the case of the Fuel Research Board's installation, where the retort was tapered and the coal was fed in at the top intermittently.

Standardisation of Coal Tar Product Analyses

Mr. W. Gordon Adam read a paper entitled "A Plea for Standardisation of Analytical Methods in Coal Tar Products Specifications." He pointed out that the four chief methods employed in the examination of coal tar products were the observation of (a) boiling points or distillation ranges; (b) crystallisation or setting points; (c) melting or softening points; (d) specific gravity, the determination of this property calling for no comment. Mr. Adam considered the methods which were in use, and suggested various lines along which standardisation could be effected.

"The Variation of the Hutchinson Consistency of Tars with Temperature" was the title of a paper read by Mr. H. M. Spiers. In regard to the effect of bitumen addition on the consistency of road tars, a nomogram was shown in the paper whereby the consistency could be readily determined. In a second paper Mr. Spiers discussed "The Consistency of Bitumen Mixtures."

This concluded the morning session.

Tar Testing Standardisation Committee

At the beginning of the afternoon session Dr. E. W. Smith submitted to the members the following resolution: "That the Joint Committee of the Fuel Section of the Society of Chemical Industry, The Coke Oven Managers' Association and the Institution of Gas Engineers be requested to devise means for the formation of a representative committee which shall standardise as far as possible the methods of testing tar and its constituents." After some discussion this resolution was moved by Mr. Samuel Glover, seconded by Mr. Escott-Wood and carried unanimously.

"Notes on Vertical Retort Tar" was the title of a communication from J. Macleod, C. Chapman, and T. A. Wilson, who analysed the results obtained from horizontal and vertical retorts at various works. They concluded that the financial balance was distinctly in favour of vertical retorts, the yield of tar from them being approximately 50 per cent. greater.

Everything considered, vertical-retort tar had many advantages over other tars from a distiller's point of view, the total value of the derivatives being higher, and refining being both easier and cheaper, except in the case of the tar acids.

Papers on "The Influence of Carbonising Conditions upon the Free Carbon Content of Tar" and "Some Observations on Coal Tars from Steamed Vertical Retorts" were read by Mr. H. Hollings and Dr. A. Parker respectively, while Mr. W. Gordon Adam, in consultation with Mr. H. W. Robinson, discussed "Distilled Tar for Roads." The use of coal tar derivatives in the prevention of infection was pointed out in Mr. A. C. Tait's communication on "Coal Tar Disinfectants." He emphasised the fact that the bacteriological examination of disinfectants had been so simplified and systematised that it should present no terrors to the tar-works chemist; and a little practical experience should enable him to perform tests with results comparable with those of skilled bacteriologists. It was only possible to manufacture the best disinfectants by the careful selection and blending of the raw materials, and a standardisation of the finished products themselves.

The Evaluation of Pitch

"The Evaluation of Pitch" is a matter of great importance, and Mr. H. Frankland Taylor, in describing his work on the subject, pointed out that at present there appeared to be no laboratory tests which gave measurements of either the binding power or the elasticity of pitches. Yet practical experience and the market prices showed that pitches varied considerably, and binding power and elasticity were undoubtedly the main factors which fixed the value of a pitch. He suggested that the binding power should be estimated by testing the tensile strength of briquettes made from standard sand and the pitch, proportioned so that the interspace in the sand was filled, and gave results of experiments on the binding power of a number of pitches, using cement-testing machines. The breaking strain of briquettes made with vertical-retort pitch averaged 250—300, horizontal 350—450, and low-temperature 200 lb. per sq. in. A small mechanical apparatus which would give the first softening point, the twist point, the "fusing point," and a measure of the elasticity of a pitch was described. The effect on the elasticity of low-temperature pitch of treatment with sulphur was tested, though not in detail. The elasticity was considerably increased.

In the discussion of the afternoon papers Mr. T. F. E. Rhead (Birmingham Corporation Gas Department) said that the proceedings had emphasised the necessity for the co-ordination and standardisation of the various methods of testing coal-tar products. Those who had attempted research work on the various tars obtainable and the different processes of carbonisation realised that there were no really satisfactory standard methods which could be universally adopted. It was eminently desirable to establish a standardised method of sampling tar.

The reading of papers ended with Mr. M. Barash's account of "Vertical-Retort Tar for Road Purposes." He concluded that the "paraffiny" nature of vertical-retort pitch combined with the low "free-carbon" content appeared to confer upon this material the necessary elasticity required to withstand shock of traffic and rough handling.

The proceedings closed with votes of thanks to the authorities of the Manchester College of Technology for the use of the meeting room, and to the several chairmen for presiding.

Dermatitis from Soda

In the Shoreditch County Court, on Tuesday, before Judge Cluer, there was an application under the Workmen's Compensation Act, the applicant being Henry Robert Wright, of 40, Norman Road, Old Ford, E., and the respondents J. Manger and Son, Ltd., of 57, High Street, Kingsland, salt and soda merchants. The applicant had contracted dermatitis on the hands and arms through working with soda, and the case came before Judge Cluer a month ago when, upon the applicant saying he thought he would be better in a month's time, Judge Cluer adjourned the case for a month. The respondents had offered to settle the case for £100. On Tuesday it was stated that the man could never work with soda any more. The judge said it was his duty to protect the interests of the man, and, as he had not recovered, the case would have to be adjourned generally.

Castleford Dye Works Explosion

Is Sodium Dinitrophenate Explosive?

THE possible explosive qualities of sodium dinitrophenate, about which much is not known, were discussed at Castleford on Thursday, November 25, at the inquest on Arthur Semper (45), foreman process worker, who was killed in the explosion at the works of Hickson and Partners, chemical manufacturers, Castleford, on Monday, November 22. The coroner was Major W. B. Arundel, and the inquiry was attended by Dr. Watts, for the Explosives Department of the Home Office, Mr. McNair, of the Chemical Department of the Home Office, Mr. R. C. Bishop, of Bradford, representing the firm, Mr. R. G. Sumner, H.M. Inspector of Factories, and Mr. B. G. Taylor representing the widow.

G. L. Appleton, process worker, said that coming down from the top of the plant he felt a bump in his back, and jumped down the stairs. There was an explosion as he reached the bottom of the steps, the place being entirely wrecked. He was satisfied with the conditions under which he worked, and thought the work was made reasonably safe.

The works manager, Mr. G. H. Frank, said that Semper was in charge of the plant, and was the most careful man they had. There was no doubt that it was the sodium dinitrophenate that exploded, because the whole of it in the extractor had disappeared. The substance was not in the list of explosives under the Explosives Act, and was not used for explosives. It had been tested in the laboratories, and he was under the impression that it was not explosive.

The foreman asked if it were beyond his knowledge why it had exploded?

The witness: That is so.

Then why should the railway companies and the Government take precautions to want so much moisture before they will take it at the ordinary rate?—For safety, I should say.

The foreman said it seemed there was something in the happening beyond the knowledge even of chemists.

Dr. Watts said that sodium dinitrophenate was not made very extensively, and general knowledge about it was small. Chemically the substance was two-thirds of the way towards picric acid, but from the explosive point of view it was a different product. Questioned by a jurymen, he agreed to a certain point and under certain conditions a new explosive had been found. What those conditions were they were going to find out.

The jury returned a verdict of "Accidental death," and recommended that the Home Office should make inquiries as to this particular material, the foreman stating that in their opinion it had caused an explosion which had been terrific, and there must be something to safeguard people in the future. They did not wish to contradict chemical opinion, but the substance had exploded.

The point raised as to the possible explosive qualities of sodium dinitrophenate was discussed by members of the chemistry staff of Leeds University in an interview with a representative of *The Yorkshire Post*. There was an agreement that the compound in itself could not be regarded as an explosive, and consequently did not come under the Explosives Act. The cause of explosions of this nature, one member of the staff observed, was generally very obscure, and in this instance it was probably due to some foreign matter which may have got mixed up with the substance and detonated the lot; that was the same sort of trigger action as occurred in the case of detonating a large charge of T.N.T. with a tiny speck of mercury fulminate. Certainly, the dinitrophenate would not detonate by itself.

It may be added that a few years ago an explosion occurred in Manchester whereby a workman lost his life. In a compensation case brought by the workman's widow, Mr. T. R. Hodgson, M.A., F.I.C., public analyst for Blackpool and Wallasey, gave evidence that dinitrophenol was explosive, and that the man lost his life owing to the explosion of dinitrophenol in a pipe. The plaintiff won her case, and recovered heavy damages.

Translucent Pottery Tableware

FURTHER meetings of the Board of Trade Committee on the above subject will be held on December 7, 8, 13 and 14, in each case at 10.30 a.m. in Quadrangle Court A, Royal Courts of Justice, Strand.

A German View of "I.C.I."

Suggestion of Anglo-German Co-ordination

THE formation of Imperial Chemical Industries, Ltd., is discussed in the *Chemiker-Zeitung* for November 24, in a note of which the following is a translation:—

"Is it by chance that this fusion of the chief British chemical companies has been called into being such a short time after the conference of representatives of German and British industry, in which the chemical industry played a leading part? And that only a few months have elapsed since Sir Max Muspratt, one of the directors of the new cartel, was in Germany? It is not difficult to find a certain connection between these events, and this assumption is confirmed if the organisation of the cartel is carefully considered. In Great Britain it was not usual, in the past, to place the technician in an important position in an undertaking of national and international importance, and complaints have often been heard that, owing to the lack of a technical representative on the board of control, undertakings which were otherwise sound have received their death-blow. Approval from many directors has greeted the breaking of this tradition, for the directors include such men as Sir Alfred Mond, Sir Max Muspratt, and Dr. G. C. Clayton.

Comparison with the I.G.

"In considering the products which will come under control by the formation of this merger, a certain similarity to the German dye cartel (the I.G.) can be recognised, it being necessary to mention only soda, synthetic ammonia, organic intermediates, and dyestuffs. The comparison cannot, however, be carried further, because, firstly, the representative of the dyestuff industry, the British Dyestuffs Corporation, Ltd., which is the weakest member of the combine, typifies a comparatively young and undeveloped industry in Great Britain, which has had to fight against heavy blows and unfavourable circumstances; and secondly, because Nobel Industries, Ltd., the representative of the imperialistic explosive industry, does not, in a technical sense, fit well into the frame of the combine, although it does so well financially.

"In our time, in which circumstances have arisen rendering efforts at trustification necessary, such a fusion is not unusual, and only reflects the picture presented by world industry. We are accustomed to seeing such alliances formed, when it is a question of uniting the interests of well-founded, long-standing industries for the purpose of mutual consolidation, the obviating of unnecessary competition, and the further development of technical achievements. In this case, only the future can show whether the assistance of the well-founded heavy chemical industry can make it possible for the British organic chemical industry, now only in its initial stage, to develop on a healthy technical basis. In this connection it must be remembered that even before the formation of the present trust the British heavy chemical industry was more or less oriented in the sense of a trust. The standing of the companies belonging to the new 'I.C.I.' cartel will naturally be considerably increased in every sense, and this will show itself when the question arises of concluding agreements with companies and industrial trusts outside Great Britain. The official report of the discussions and results of the Anglo-German conference may be remembered, and considered from this point of view it is certain that the slogan of the new combine will be 'Live and Let Live.'"

Fertilisers and Feeding Stuffs Bill

A STANDING Committee of the House of Commons on Tuesday disposed of a large batch of amendments to the Fertilisers and Feeding Stuffs Bill. The Bill has already been through the House of Lords, and after discussion of amendments it was ordered to be reported to the House. The Bill is to amend the law with respect to the sale of fertilisers and feeding stuffs, providing penalties for the offering for sale of articles that do not conform with the schedules to the Bill, or which contain ingredients of a character deleterious to cattle or poultry. It also provides that a purchaser may require statements from the seller as to the contents of the articles he is purchasing, and, except as provided for in the Bill, such statements are to be an implied guarantee as to their character.

Toxic Gas in Warfare

Experts on Future Developments

GAS had been proved an effective weapon of war, cheaply and easily manufactured and offering great opportunities of surprise, said Brigadier-General H. Hartley (late Controller of the Chemical Warfare Department in the Ministry of Munitions) in a lecture which he gave on Friday, November 26, at the Imperial College of Science and Technology, South Kensington.

Professor H. Brereton Baker, Professor of Chemistry in the Imperial College of Science, who presided, said that the first laboratory organised for chemical warfare was established in that room—the chemical lecture theatre—in which they were met, and that the first experimental gas bombs were exploded in the yard outside.

Gas Less Deadly than Other Weapons

Tracing the detailed development of gas warfare, General Hartley pointed out that the first success of gas attack was brought about by the element of surprise in its use against unprotected troops at Ypres. Except in those first few weeks the proportion of casualties or permanent injury from gas was far less than from other weapons, the respective proportions among our own troops being 2.6 per cent. as against 25 per cent. It could not be said of gas that it was less humane than the tank, which, according to a treatise, was designed to destroy hostile weapons and personnel by passing over them.

Successes attending the use of gas in the last war were gained under exceptional conditions that might never occur again. Then everything was in the nature of a set-piece, with positions located. Experience had shown that protection against gas would always depend very much upon appliances and gas discipline. Meteorological forecasts would still play an important part in gas tactics, and there might be fresh substances employed with new and vastly increased toxic properties, and in such a manner as to alter the balance between offensive and defensive warfare, but he who would prophesy on the matter was rash. He did not think that the use of gas against warships would be much developed, and believed that there would continue to be reliance on shell fire, but yet the possibilities of naval and gas attack should not be lost sight of. The power to retaliate with gas depended upon the existence of the chemical industry, said General Hartley, and a nation's fighting strength was very largely defined by its industrial strength. Economic pressure might bring industrial agreements, limiting supplies of raw materials. Industrial development might, he thought, secure the greatest guarantee of peace. The recent combination of chemical firms in this country he regarded as of great significance for industrial strength and national defence.

Chemical Industry Club : Annual Meeting

IN the annual report of the executive committee, presented to the annual meeting on Tuesday last, it is stated that during the year ended August 31 the membership remained practically the same as in the previous year: forty-two new members were elected, and losses due to resignations and other causes amounted to 38. On September 1, 1926, the total membership was 726, of which 435 were town members, 236 country members, and 55 overseas members. In July last, the club was able to take a useful part in the Congress of Chemists and annual meeting of the Society of Chemical Industry by offering honorary membership to chemists and their friends attending the meetings. The offer met with a good response, and many visitors from the country and overseas expressed their gratitude for the hospitality and assistance which they obtained at the club. The monthly meetings held during the winter and spring were well attended, and the committee's thanks are offered to the following for their addresses: Dr. W. R. Ormandy, "A Recent Tour in Central Europe"; Dr. J. J. Fox, "Experiences in the Government Laboratory"; Major T. G. Tulloch, "Recent Developments in Surface Combustion"; Professor A. J. Clark, "Some Undesirable Commercial Influences in Therapeutics"; Dr. T. Slater Price, "The Sensitivity of the Photographic Plate"; and Mr. J. W. Topley, "The Steam Accumulator as a Factor in Fuel Economy." The committee acknowledge the receipt of two handsome gifts: a silver cigarette box from Mr. H. E. Coley, and an oak cigar cabinet from Mr. A. Chaston

Chapman, two past presidents. To Messrs. R. B. Pilcher and H. Melville Smith, who are retiring from the committee and not seeking re-election, their colleagues extend their hearty thanks for many years of devoted service to the affairs of the club. The thanks of the committee and the members are also given to the steward and his staff for their good work; the Christmas Fund realised £174 2s. 6d. The executive committee desires to emphasise the necessity for increasing the membership, and urges members to propose, or suggest the names of, suitable candidates for election. The Club premises would accommodate with ease a further hundred members, and even an additional fifty members would greatly strengthen the financial position and enable the club better to fulfil the purposes for which it was founded.

The financial statement shows both the receipts and the expenditure to be slightly lower than for the previous year, and the surplus for the year to be £8 1s. 3d.

At the annual meeting on Tuesday evening the reports, etc., were adopted and the following officers elected for the ensuing year:—President, Professor F. G. Donnan, F.R.S.; Chairman of Committee, W. R. Ormandy, D.Sc., F.I.C.; Honorary Treasurer, T. Miller Jones; Honorary Secretary, E. H. Tripp, Ph.D.; Secretary, J. Arthur Williams; Committee: E. Theodore Brewis, F.I.C., Arthur J. Chapman, F.I.C., W. H. Coleman, F.I.C., A. G. Craig, F. B. Dehn, Ph.D., F.I.C., J. C. Drummond, D.Sc., F.I.C., Harley F. Knight, F.I.C., G. S. W. Marlow, B.Sc., F.I.C., J. W. Black, B.Sc., A.I.C., R. L. Collett, M.A., F.I.C., and J. F. Ronca, A.I.C.

British Association of Chemists

Problems of Registration

THE CHEMICAL AGE has already commented briefly on the recently issued statement of the special committee appointed by the Institute of Chemistry to consider the registration of chemists. Since the committee has asked not to be dissolved and its statement is still under consideration by the local sections of the Institute, the matter is in a measure *sub judice* and detailed comment on the report is premature.

With the flouting, in Section III. of the statement, old resolutions passed at the Liverpool and York Conferences of the Institute, this Association has no concern. It is, however, legitimate to remark that the York resolution requested the council of the Institute to take immediate steps towards the formation of a **Registration Council**, consisting of representatives of the Institute, universities and technical schools, Society of Public Analysts and the British Association of Chemists. None the less, this Association cannot allow to pass unnoticed the statement that "the B.A.C. is not concerned with qualification and registration." The statement, indeed, is so absurd as to need no repudiation. It can only damage the repute of those who made it. The subject is one in which the Association has been interested from its formation, and the compilation of a register of chemists is set forth as one of its aims in the printed rules of the Association, which the Committee should have seen. Moreover, informal discussions of the subject between representatives of the Association and the Institute had much to do with the investigation of the question of registration by the latter body. It is also known that, in deference to the examination of the subject by the Institute, the Association held in abeyance its own committee upon the subject and took no immediate steps in accordance with the concrete proposals made by this committee.

The question of registration is admittedly a difficult one, and its difficulties are realised by none more than by those who are attempting to frame proposals which may surmount them. When all allowance has been made for the difficulties of the subject, and with a due appreciation of the caution with which a chartered body like the Institute, bearing in mind the Peterson judgment, must accept new obligations, it must still be said that the report remains a disappointing document. It is hard to believe that the sections of the Institute responsible for the preparation of the statement in favour of registration which the report labours so hard to refute will accept this rebuff as final. The Association believes that progress in the direction of registration is possible, and that it depends on the advice and co-operation of all societies whose membership is largely composed of chemists.

H. T. F. RHODES.

Effects of the Coal Strike

Chemical Bottle Manufacturers Discharge 100 Men

THE far-reaching results of the coal stoppage were exemplified, in the Bow County Court, on Monday, before Judge Snagge, during the hearing of a compensation claim, in which a youth of 20, William Simpson, was the applicant, and the respondents the City Glass Bottle Co., Ltd., Canning Town, manufacturers of glass chemical jars and chemists' bottles. The lad was injured in August, 1925, with the result that the index finger of his left hand was flexed. It was alleged that it would be permanently useless, and possibly later on would have to be amputated. He went back to work in January, earning more than previously, but in May came the general strike, when all of them turned out. He went back again until the end of May, when one of the two furnaces was closed down, owing to the inability to get sufficient English or foreign coal. The applicant now complained that in six months he had only earned £5 by casual work at the respondents', whereas he should have had £26, and that he was put on a glass bottle machine, at which work he had to wear gloves, which interfered with his work, owing to his damaged finger. He agreed that when the furnace shut down he was only one of 100 men who were discharged, who had never had any work since, but there was another furnace burning, and he considered that under the circumstances he should have been found a job there.

Mr. Edgar John Norton, secretary to the respondents, said that the lad was quite capable of working the glass bottle machine when he came back after the accident. He was discharged with 100 others, simply and solely because a furnace had to be shut down owing to their inability to get coal. He would be offered work so soon as the furnace was restarted.

Judge Snagge, in giving his decision, said that the lad appeared to have earned more after going back on a superior job than prior to the accident, but for some months past very much less, as his work had been casual. The only question was whether the reduction was due to any physical incapacity or other cause, and he was of opinion that the finger had nothing to do with it, but there was no work for him to do. This was only another example of what was happening all over the country owing to the deplorable coal stoppage. The application for a review would, therefore, be dismissed, with costs.

Woodall-Duckham Vertical Retorts

THE Warrington Corporation Gas Department have placed an order with the Woodall-Duckham Vertical Retort and Oven Construction Co. (1920), Ltd., for an extension to the existing Woodall-Duckham vertical retort installation at their Longford Works. The extension consists of a new bench of twelve 80 in. Woodall-Duckham continuous vertical retorts, with a total daily carbonising capacity of 96 tons. The contract includes coal handling plant, foundations, and a waste-heat boiler.

The Ely Gas and Electricity Co., Ltd., have also placed an order with the Woodall-Duckham Co. for an installation of Woodall-Duckham continuous vertical retorts. This order comprises a bench of three 53 in. retorts, set in single units and heated by means of two producers situated at the ground level at one end of the bench. The plant will have a daily carbonising capacity of 15 tons. The contract includes all foundations, a retort house, and a steam engine driven lift to deal with the coal and coke to the plant.

Electroplaters' and Depositors' Society Meeting

A SPECIAL meeting of the Electroplaters' and Depositors' Technical Society was held at the Municipal Technical School, Birmingham, on Friday, November 26, when a large party of members travelled from London to Birmingham for the meeting. Through the kindness of Mr. E. R. Canning, who entertained the party to lunch, a round of visits to various works was made. At the meeting in the evening about 120 persons were present. The chair was occupied by the president of the society, Mr. S. Field, A.R.C.Sc., and the subject for discussion was nickel plating. Two papers were presented to the meeting: "Nickel Solutions," by E. A. Ollard, A.R.C.Sc., and "The Commercial Deposition of Nickel," by E. J. Dobbs, B.Sc.

Chemical Matters in Parliament

Sugar Beet

Mr. Guinness (Minister of Agriculture), replying to Mr. Hayes (House of Commons, November 25), stated that employment on the land on sugar beet cultivation was mostly seasonal. He had no information as to the number of persons permanently engaged. Replying to Mr. Short (November 29), he stated that the total amount of subsidy paid to the beet sugar industry since the passing of the British Sugar (Subsidy) Act, 1925, was £2,681,946; that the acreage returned as being under sugar beet in England and Wales in 1926 was 125,814 acres, as compared with 54,750 acres in 1925; and that in the 1924-25 season, three factories produced 478,308 cwts. of sugar of the estimated value, duty paid, of £743,353, while in the 1925-26 season nine factories produced 1,038,366 cwts. of sugar of the estimated value, duty paid, of £1,355,579.

Lead Paint Bill

The Lead Paint (Protection against Poisoning) Bill was considered (House of Commons, November 30). The Lords' amendments were agreed to, and the bill was read a third time.

Chemical Merchant's Application for Discharge

An application for discharge by James Bertram Roth, trading as J. B. Roth and Co., 21, Cannon Street, Manchester, chemical and colour merchant, was heard on Monday at the Court House, Manchester. The debtor carried on business successfully until he joined the army in 1915, and during his absence until 1919 his brother continued the concern with fair success until he had to leave it in the hands of others owing to illness. The result was that, whereas the sales in 1916 were £81,000, they latterly fell to £7,000 a year. On his demobilisation the debtor endeavoured to pull the business round, but was badly affected by the slump in colours and dyestuffs. In addition he was away from the business for six months owing to illness. Two arrangements were made with creditors, but eventually the present proceedings took place, the liabilities totalling £1,061. It was at first proposed to pay 8d. in the £, but consequent upon a concession by the debtor's brother it was increased to 1s. in the £. The Official Receiver agreed that, altogether apart from the effects of illness, the debtor had been caught in a world slump against which it was impossible for him to contend. The discharge was granted subject to a suspension for two months.

Hardinge Mill Orders

THE Grinding and Pulverising Offices of International Combustion, Ltd., 11, Southampton Row, London, report the following contracts:—

For England:—One 6 ft. by 22 in. cylinder Hardinge Conical Ball Mill for wet grinding limestone and clay; one 6 ft. by 48 in. cylinder Hardinge Conical Pebble Mill for wet grinding feldspar and calcined flint; one 5-roller Raymond Mill for grinding strontium.

For India:—One 12 ft. Gayco Air Separator for cement work.

For France:—One 4½ ft. diameter Hardinge Conical Ball Mill for grinding ochre sand; one 5-roller Raymond Mill for coal; one 5-roller Raymond Mill for gafsa phosphate; one 3-roller Raymond Mill for bauxite; one No. 0000 Raymond Pulveriser for paranitraniline; one No. 00 Raymond Pulveriser for carbonate of soda; one No. 00 Raymond Pulveriser for ochre; one No. 00 Raymond Pulveriser for plaster.

New German Steel

THE German Press has been giving prominence to reports of remarkable results in steel production which are said to have been obtained by the I. G., although the latter has apparently issued a contradiction of the reports. According to the newspaper reports, patents have been acquired or taken out by the I. G. for methods of treating iron so that it is converted to a steel very superior in properties (as regards hardness, elasticity, etc.) to that obtained by smelting. The cost of production is said to be lower than that of ordinary steel. According to later statements the work is still experimental, and has not reached the patent stage.

From Week to Week

THE STAVELEY COAL AND IRON CO. have decided to reopen their Devonshire works, which have been closed for nearly six months. An additional battery of 30 coke ovens is to be relighted at once, which will make 65 in operation.

A SPECIAL SECTION for British exhibitors has been arranged at the Ring Messhaus for the next Leipzig International Industries Spring Fair, which takes place from March 6 to 12, 1927. Inquiries may be addressed to the hon. organising secretary, 1, Gower Street, London, W.C.1.

THE STREAM-LINE FILTER CO., LTD., of 64, Victoria Street, Westminster, have received an order to install a stream-line separator of 50 tons per hour capacity on each of the two ships being built for the Grace Line at the yard of the Furness Shipbuilding Co., Ltd., Haverton Hill-on-Tees.

A LECTURE ON "HEAT INSULATION and the Materials used for the Purpose" was given by Mr. J. S. F. Gard to the Society of Chemical Industry at Armstrong College, Newcastle, on Tuesday, November 23. It was announced that a special meeting of the society would take place on December 8, when the possibilities of introducing new chemical industries on Tyneside would be discussed.

MAJOR FRANCIS EDWARD WENGER, Mayor of Hanley, and a member of the firm of Wengers, Ltd., chemical manufacturers, Stoke-on-Trent, presided at the annual Venison Feast of the Ancient Corporation of Hanley, on Thursday, November 25. Major Wenger is the younger son of the late Mr. Albert Francis Wenger, founder and head of the firm of Wengers, Ltd., who was also a Mayor of Hanley twenty years ago.

PROFESSOR G. G. HENDERSON, F.R.S., of the University of Glasgow, president of the Institute of Chemistry, delivered a public lecture, under the auspices of the Belfast and District Section of the Institute, on "The Chemist and the Community," on Friday, November 26, at the Belfast Municipal College of Technology. During his stay in Ireland Professor Henderson paid a visit to the Linen Industry Research Association at Lambeg.

PROFESSOR EZER GRIFFITHS, of the National Physical Laboratory, Teddington, delivered a lecture on "The Romance of Refrigeration," at the Regent Street Polytechnic, London, on Friday, November 26. Lord Dudley Gordon, the chairman, explained that Professor Griffiths was engaged on tests and research on refrigeration. He and his brother had made many valuable suggestions, which manufacturers of refrigerating machinery had been glad to carry out.

SIR ERNEST RUTHERFORD, president of the Royal Society of London, delivered the anniversary address to the members of the society on Tuesday, on the occasion of the annual meeting, held at Burlington House. After delivering the address Sir Ernest Rutherford presented the society's medals, among the recipients being Sir William Hardy (a Royal Medal) and Sir James Walker (the Davy Medal). At the anniversary dinner held in the evening Sir Alfred Mond was present.

DR. W. CULLEN, a well-known authority on the mineral wealth of South Africa, gave the last of a series of lectures on South African trade at the City of London College on Monday. It was pointed out that of the many minerals produced, tin, fluorspar, and copper had assured prospects, but a great future was in store for five varieties in particular, namely, psilomelane (manganese), chromite (chromic oxide), asbestos, mica, and corundum, of all of which enormous quantities were known to exist.

APPLICATIONS ARE INVITED for the following appointments: Leverhulme Chair of Physical Chemistry in the University of Bristol, vacant at Christmas, 1926, on the resignation of Professor J. W. McBain. The Registrar. December 10.—Assistant Lecturer on Organic Chemistry in the University of Leeds. £350. The Registrar. December 6.—An Assistant, Grade 1, for temporary service in the Research Department, Woolwich, under the Directorate of Explosives Research. £370 plus bonus (£510 ss.). The Chief Superintendent, Research Department, Woolwich, London, S.E.18.—An Agricultural Chemist for the Kirtan Agricultural Institute, near Boston, Lincs. The Principal.—A Government Analyst for the Public Health Department, Southern Rhodesia. The Secretary, High Commissioner for Southern Rhodesia, Crown House, Aldwych, London, W.C.2.

RECENT WILLS INCLUDE: Mr. Joseph Brunt Turner, of Seventh Avenue, Blackpool, bleacher and dyer (net personality £9,725), £9,853.—Mr. Percy Stone, of 36, Grand Parade, Eastbourne, for more than thirty years with R. Sumner and Co., Ltd., manufacturing chemists, of 40, Hanover Street, Liverpool (net personality £3,077), £3,131.—Mr. Arthur Foster, of Mill House, Halstead, Essex, manager of the Halstead factory of Courtaulds, Ltd., artificial silk manufacturers (net personality £11,434), £11,711.—Mr. Francis Algernon Govett, of Holiday House, Sunningdale, a director of the Amalgamated Zinc (De Bavays), Ltd., and other companies (net personality £26,323), £32,655.—Mr. Joseph William Kemball, of Cleveland Road, Wanstead, late of Kemball Bishop and Co., Ltd., chemical manufacturers, Crown Chemical Works, Bromley-by-Bow, London, who died on September 24 (net personality £35,171), £35,271.

PROFESSOR W. OSTWALD, of the University of Leipzig, was presented with the Thomas Graham Prize at the general meeting of the Kolloidgesellschaft in Düsseldorf.

SIR ELLIS GRIFFITH, K.C., a director of the Mond Nickel Co., collapsed at Swansea on Tuesday evening after his return from duties at the assizes, and died shortly afterwards.

DR. A. L. NORBURY, who recently had conferred upon him the degree of D.Sc. of Manchester University, has been appointed chief metallurgist to the British Cast Iron Research Association.

MR. T. V. BARKER, lecturer on chemical crystallography in the University of Oxford, and Fellow of Brasenose College, has been elected Curator of the Bodleian Library of the University. Mr. R. P. Bell, scholar of Balliol College, has been elected to the Gibbs Scholarship in chemistry.

MR. THOMAS CROWE, Widnes, was fined £2 at the Widnes Court last week for stealing 50 lb. of lead from the Pilkington Sullivan Works of the United Alkali Co. It was stated that Crowe had been for thirty-four years in the service of the United Alkali Co., but was discharged some time ago.

PROFESSOR A. SMITHELLS, F.R.S., Emeritus Professor of Chemistry in the University of Leeds, delivered a lecture entitled "Fifty Years of Science" before the Cavendish Society, at the university, on Monday. He said that it happened to be 50 years to a month since he began, as a university student, the study of chemistry. His first teacher was Lord Kelvin—then Sir William Thomson.

PROFESSOR J. I. O. MASSON, of the University of Durham, has been appointed to act as the representative of the Australian National Committee on the council and advisory committee of the International Union of Pure and Applied Chemistry, and Professor N. T. Wilsmore, of the University of Western Australia, to act as Australian delegate on the Commission de l'Azote.

AT A MEETING of the London Section of the British Association of Chemists on Friday, November 26 (Mr. S. R. Price presiding), details respecting the organisation of the district were discussed. The general secretary reported that a committee was to be formed to consider the registration question and assured members that there would be no delay in framing a practical policy.

A SLIGHT EXPLOSION occurred on Wednesday, November 24, in the metallurgical department of Birmingham University, as a result of which William Hooper (16), a laboratory assistant, received injuries whilst working with a small furnace in which metal was being heated. Hooper was alone in the furnace room at the time of the accident. It is believed that some phosphorus was present in the metal. Hooper, suffering from burns, was detained in the Queen's Hospital.

PROFESSOR A. R. LING (University of Birmingham) presided on Wednesday, November 24, at the annual meeting of the Birmingham Section of the Institute of Chemistry, and gave an address on "Chemistry as a Career." He emphasised the importance of a sound general education and pointed out that the vast resources of the British Empire called for an ever-increasing army of chemists to carry out investigations and to show to what uses they could be put.

A COAL TREATMENT LABORATORY, the first of its kind in the country, was opened at the University of Birmingham Mining School by Viscount Chelmsford, chairman of the central committee of the Miners' Welfare Fund, on Thursday, November 25. The laboratory has been inaugurated to enable the mining department of the university to extend its activities into the investigation of the grading, cleaning, and classification of coal. Research on colloid fuel will also be carried out.

PROFESSOR HENRY LOUIS, in the France-Focquet lecture at Edinburgh, on Tuesday, November 23, dealt with "Modern Methods of Preparing Coal for the Market." In emphasising the importance of dryness, he described the use of the cleaning tables at the McComas Mines, West Virginia, and mentioned that these tables were being handled in this country by the Birtley Iron Co., who had just completed a plant at Wardley Colliery. The results showed that ash of over 10 per cent. had been reduced to 5 per cent. Describing the flotation process, the principle of which was surface tension, he described various types of flotation apparatus, the best known being that of Minerals Separation, Ltd.

Obituary

Mr. William D. Livermore, a well-known textile chemist, at Lawrence, Massachusetts, on October 22.

MR. FRANK FANNING JEWETT, once lecturer in chemistry in the University of Tokyo, on July 1, at Honolulu, aged 82.

THE EARL OF CHICHESTER, chairman of Borax Consolidated, Ltd., and other companies, and a director of several companies, aged 59.

MR. WILLIAM NATHANIEL COURTNEY ALLEN, the representative of the Bradford Dyers' Association in China for nearly 20 years, while on his way home to retire. Mr. Allen, who was born near Huddersfield and was formerly connected with a merchanting concern in Manchester, went to the Far East some 30 years ago, and ten years later, after travelling in China and Japan, took up his headquarters at Shanghai as the B.D.A. representative.

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- PHOSPHORUS COMPOUNDS.**—Organic phosphoric acid compounds. Parts IV. and V. F. Zetzsche. *Helv. Chim. Acta*, October, 1926, pp. 705-714.
- SALTS.**—Organic acids and bases in non-aqueous solutions. Part I. F. Hölzl. *Monats. für Chem.*, September 29, 1926, pp. 119-149.
- SAPONIFICATION.**—The influence of the alcohol component on the rate of saponification of acetic acid esters. A. Skrabal and A. M. Hugetz. *Monats. für Chem.*, September 29, 1926, pp. 17-38.
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Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Complete Specifications

- 260,339. FAST DYEINGS ON WOOL, PRODUCTION OF. J. Y. Johnson, London. From Badische Anilin und Soda Fabrik, Ludwigshafen-on-Rhine, Germany. Application date, July 27, 1925.

Wool is charged with a sulphonated azo dyestuff component preferably derived from naphthalene which must contain hydroxy- or amino-groups or both enabling the component to be coupled with diazo compounds. The material is then developed with a diazo compound. The component and the diazo compound are chosen so as to yield an insoluble or difficultly soluble azo dyestuff not suitable for direct dyeing, i.e., poor in sulphonic acid groups. The components may be of very different character and should be aromatic sulphonated compounds which may contain other salt-forming groups. The components to be developed must not be copper compounds of substantive ortho-hydroxy-azo-dyestuffs, but may be chrome dyestuffs possessing an amino or hydroxyl group enabling them to be coupled with a diazo compound. In an example, wool is first treated with bis-(2:3-hydroxy-naphthol)—1:5-naphthylene diamine-disulphonic acid, which is obtained by sulphonating the condensation product of 1:5-naphthylene diamine and 2:3-hydroxynaphthoic acid. The wool is then developed with diazotised meta-xyldine.

- 260,346. PHARMACEUTICAL PRODUCTS, MANUFACTURE OF. Sir W. J. Pope, The University Chemical Laboratory, Cambridge. Application date, July 28, 1925.

It has been found that salts of natural or synthetic anaesthetic bases such as cocaine or ethocaine (diethylamino-ethylpara-amino-benzoate) with boric acid are more effective than the salts usually employed. One molecular proportion of the alkaloid or base is associated with five atomic proportions of boron in the form of a complex borate. The base and the boric acid are separately dissolved in a solvent such as acetone and the solutions mixed together. Alternatively, the sulphate of the base may be decomposed with a barium salt of boric acid and the barium sulphate filtered off. Examples are given of the production of amydracaine borate, ethocaine borate, benzamine borate, and butyn borate.

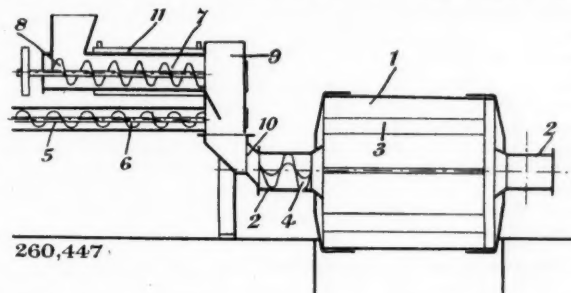
- 260,382. SOLUTIONS OF AMINO-ARYL-DICHLORO-ARSINES OR AMINO-ARYL-ARSENIOUS OXIDES, MANUFACTURE OF. G. Newbery, Stanmer, Blake's Lane, New Malden, Surrey, and May and Baker, Ltd., Garden Wharf, Church Road, Battersea, London, S.W.11. Application date, August 29, 1925.

The process is more particularly for the manufacture of solutions of 3-amino-4-oxyphenyl-dichloroarsine and 3-amino-4-oxyphenyl-arsenious oxide. These solutions are obtained by the interaction of a solution of an amino-aryl-dichloroarsine hydrochloride and an organic base such as piperazine or ethyl-amine. By the use of a limited amount of the base relatively stable solutions are obtained which do not contain any substantial amount of free hydrochloric acid. If a larger quantity of the base is employed, neutral or alkaline solutions of lower stability to atmospheric oxidation are obtained. The former class contains the free aminoaryl-dichloro-arsine base, and the latter the aminoaryl-arsenious oxide. Examples are given.

- 260,447. CEMENT MIXED WITH GYPSUM, PROCESS FOR THE PRODUCTION OF. C. Pontoppidan 48, Vejlesvej, Holte, and S. Buntzen, 1, Christian Den 2's Alle, Copenhagen, Denmark. Application date, January 4, 1926.

The time of setting of Portland cement can be controlled by the addition of 2-5 per cent. of raw gypsum. In the case of cement containing slag, up to 25 per cent. of gypsum can be added. It has been found that the addition of gypsum to clinkers followed by grinding in a mill renders the quality of the cement unreliable and variable in regard to the time of setting of the cement. This effect is due to the thermal conditions prevailing in the mill. The clinkers may have a

higher temperature than the surroundings, and the grinding generates heat so that the temperature may rise to 125°-160° C., which converts the gypsum into burnt gypsum, or plaster of Paris. If the gypsum is present as plaster of Paris, the time of setting is much longer than if it is present as raw gypsum. The time required for grinding when plaster of Paris is employed is about 60 per cent. longer than if raw



gypsum is employed. In this invention, means are provided to ensure that the gypsum is present in form of raw gypsum. The mill may be cooled with water during grinding or the clinkers may be cooled before grinding. The raw gypsum is finely ground separately, and is then added to the ground cement. The mixing drum 1 is mounted on hollow trunnions 2, and is provided with elevating vanes 3. The materials are supplied by a worm conveyor 4, and discharged through the opposite trunnion 2. The finely ground raw gypsum is supplied through a tube 5 having a worm conveyor 6, and at the same time ground cement is supplied through a tube 7 having a worm conveyor 8. The two tubes open in a common chamber 9 leading to the mixing drum. The cement supply tube is provided with a water cooled jacket 11.

- 260,455. MINERAL OIL DISTILLATES AND PARAFFIN WAX, PROCESS FOR THE PURIFICATION OF. The Burmah Oil Co., Ltd., 175, West George Street, Glasgow, and R. R. le G. Worsley, 20, Northcote Avenue, London, W.5. Application date, January 27, 1926.

The process is for the treatment of any distilled fraction or cracked distillate of petroleum, shale oil, coal oil, or like mineral oil, including petrols, kerosenes, lubricating oils, and paraffin wax. The oil fraction in the form of vapour and in vacuo or at a substantially reduced pressure is passed through Fuller's earth, silica gel, bauxite, or other hydro-silicate or equivalent absorbent. The temperature is only sufficient to maintain the oil in a vapour state. The pressure should be lower the higher the boiling point. The process is carried out on the counter current system, in which the vapour passes over Fuller's earth of progressively increasing activity. The oil to be treated is preferably of a narrow distillation range, or it may be first fractionated. Oils containing nitrogen bases may first be washed with sulphuric acid, and oils containing phenols may first be washed with alkali. The time of the operation can be reduced by the presence of an inert gas, but not sufficient to materially affect the vacuum.

- 260,058. INTERMEDIATES AND DYESTUFFS, MANUFACTURE OF. British Dyestuffs Corporation, Ltd., 70, Spring Gardens, Manchester, K. H. Saunders, and M. Mendoza, Crumpsall Vale Chemical Works, Blackley, Manchester. Application date, July 31, 1925.

These compounds are obtained by the condensation of 5 thiol-salicylic acid or sodium salt, its homologues, or substitution products with nitro compounds of the aromatic series which contain a labile nuclear halogen atom. 5-thiol-salicylic acid is described in the *Journal of the Chemical Society*, 1922, 2,560. The products are mono- or poly-nitro compounds which are derivatives of 4-oxy-diphenyl-sulphide 3-carboxylic acid, its homologues and substitution products. The nitro

sulphides can be reduced to amino sulphides, which are useful components for azo dyestuffs. Mono-amino-sulphides are used as first components, and some of the *m*-diamino-sulphides can be used as second components. The diamines can be partly acylated, and the remaining amino group diazotised and coupled to a second component. When the dyestuffs are fixed on animal or vegetable fibres by metallic mordants, little or no change in shade occurs. These sulphides may be used as components for dis- or polyazo dyestuffs. The diamino sulphides may be coupled with tetrazotised benzidine or other diamine, or the mono-amino-sulphides may be coupled with an amine or derivative such as *p*-xylydine, cresidine, α -naphthylamine or its methyl-omega-sulphonate, and the resulting dyestuff re-diazotised and coupled again to obtain straight chain azo dyestuffs; or the mono-amino-sulphides may be diazotised and coupled to a component capable of coupling a second time under different conditions with a second diazo compound to obtain dis- or polyazo dyestuffs. A number of examples are given.

NOTE.—Abstracts of the following specifications which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention: 244,078 (Rhenania Verein Chemischer Fabriken Akt.-Ges.), relating to process for obtaining products from gypsum, see Vol. XIV, p. 161; 252,028 (P. Berthelemy and Vicomte H. de Montby), relating to aluminium alloys, see Vol. XV, p. 15 (Metallurgical Section).

International Specifications not yet Accepted

259,188. EXTRACTING ZINC. Vereinigte Werke Dr. R. Alberti and Co., 4, Reuss Strasse, Gozlar-on-Harz, Germany. International Convention date, September 29, 1925.

Slag containing zinc and iron is finely divided, mixed with pulverised rock salt and treated with sulphuric acid. The mixture becomes crumbly, and is then roasted in air. Zinc chloride and sodium sulphate are then dissolved out with water, and can be separated. The remaining iron oxide is suitable for use as a pigment.

259,200. SULPHURIC ACID. Newport Co., Carrollville, Wis., U.S.A. (Assignees of J. G. Schmidt, 1611½, Central Avenue, Milwaukee, and H. R. Lee, 710, Montana Avenue, Wis., U.S.A.) International Convention date, September 30, 1925.

Corrosion of iron or steel in contact with sulphuric acid or solutions containing hydrogen sulphate ions is prevented by adding thiourea or a substituted urea such as the methyl, ethyl, benzyl, or phenyl derivative. This will prevent pitting when iron articles are pickled to remove scale, or when zinc is removed from galvanised iron. Sulphuric acid may be contained in iron receptacles if treated in this way.

259,201. PHOSPHORIC ACID. I.G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. (Assignees of F. G. Liljenroth, 10, Kungsträdgårdsgatan, Stockholm.) International Convention date, September 29, 1925.

Phosphorus pentoxide or phosphoric acid and hydrogen are obtained by the reaction between phosphorus or phosphoretted hydrogen and water vapour in the presence of a metal or metal oxide catalyst. The latter become coated with phosphates, and are regenerated by heating in the presence of hydrogen in the same apparatus. To avoid a fall of temperature the hydrogen may be preheated, or air may be admitted to burn a portion of it.

259,204. ESTERS. I.G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. International Convention date, October 5, 1925.

Esters are produced from a mixture of an acid, an alcohol, and another liquid such as benzene, toluene, carbon tetrachloride, or hexane, which is insoluble in water but capable of forming a mixture with water having a boiling point below any of the components or the ternary mixture of alcohol, water, and the liquid. The mixture is heated under pressure so that the water is distilled off with the added liquid, but without alcohol. Catalysts may be present such as sulphuric or phosphoric acid, pyridine and its homologues, or neutral inorganic salts, in the proportion of 1 per cent.

Thus, a mixture of phthalic anhydride and ethyl alcohol is heated to boiling at 15-20 atmospheres in an apparatus having

a distillation column into which benzene is continually introduced. Benzene and water distil over and are separated, and when water no longer distils over the rest of the benzene is distilled off and the diethyl phthalate purified.

LATEST NOTIFICATIONS.

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- 261,707. Process for effecting the cleavage of fats and oils. I. G. Farbenindustrie Akt.-Ges. November 20, 1925.
- 261,720. Manufacture and production of wetting and emulsifying preparations. I. G. Farbenindustrie Akt.-Ges. November 19, 1925.
- 261,722. Method of making calcium cyanide and product thereof. California Cyanide Co., Inc. November 23, 1925.
- 261,732. Process for eliminating water from liquid sulphurous acid. Allgemeine Ges. für Chemische Industrie. November 19, 1925.
- 261,747. Manufacture of amines of the cyclohexane series. I. G. Farbenindustrie Akt.-Ges. November 17, 1925.
- 261,757. Manufacture of condensation products and vat dyestuffs of the benzanthrone series. I. G. Farbenindustrie Akt.-Ges. November 17, 1925.
- 261,764. Manufacture of cyclohexylamines. I. G. Farbenindustrie Akt.-Ges. November 19, 1925.
- 261,769. Manufacture of azo-dyestuffs. I. G. Farbenindustrie Akt.-Ges. November 19, 1925.
- 261,770. Manufacture of pyrazolone-azo-dyestuffs. I. G. Farbenindustrie Akt.-Ges. November 19, 1925.

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- 238,230. Electro-deposition, Process and apparatus for. International Copperclad Co. August 5, 1924.
- 244,405. Iron castings with a low carbon content, Processes for the production of. K. Emmel and Thyssen and Co. Akt.-Ges. December 9, 1924.
- 242,951. Heavy metal carbides and similar difficultly melting compounds, Manufacture of. Gewerkschaft Wallram. November 14, 1924. Addition to 239,499.
- 244,730. Hydrogenating coal and hydrocarbons, Process for obtaining hydrogenation gas for. F. Bergius. December 18, 1924.
- 245,107. C.C-di-substituted barbituric acids and 4-dimethylamino-1-phenyl-2:3-dimethyl-5-pyrazolone, Manufacture of compounds of. Chemische Fabrik auf Actien (vorm. E. Schering). December 24, 1924.
- 246,098. Crystalline dextrose from starch-bearing materials, Method of producing. Corn Products Refining Co. January 17, 1925.
- 250,892. Alkyl resorcinols, Production of. Sharp and Dohme. April 16, 1925.
- 253,091. Electrical deposition of organic materials. Kodak, Ltd. June 8, 1925.
- 261,051. Titanium compounds, Preparation and use of. P. Spence and Sons, Ltd. W. B. Llewellyn, and S. F. W. Crundall. May 8, 1925.
- 261,077. Conversion of heavy hydrocarbon oils into lighter hydrocarbon oils, Process and apparatus for. H. T. Wright and F. Esling. August 10, 1925.
- 261,080 and 261,164. Electrolytic apparatus. A. E. Knowles. August 11 and October 19, 1925.
- 261,085. Crystallisation, Process and apparatus for. E. C. R. Marks. (Grasselli Chemical Co.) August 11, 1925.
- 261,133. Arsinic acids of the aromatic series, Process for the production of. A. J. Ransford. (L. Cassella and Co., Ges.) September 2, 1925.
- 261,240. Acylhalides, Manufacture of. British Dyestuffs Corporation, Ltd., and S. Coffey. March 15, 1926.
- 261,267. Converting methane gas into hydrocarbons of higher carbon content, Process of. Petrole Synthetique Soc. Anon., and A. Folliet. April 29, 1926.
- 261,269. Metallurgical apparatus. Soc. Anon. Metallurgique d'Aubrires et Villerupt. April 3, 1926.

Applications for Patents

- Böhme Akt.-Ges., H. T. Sulphurising fatty acids, etc. 30,073. November 27. (Germany, December 16, 1925.)
- Carpmael, W., and I. G. Farbenindustrie Akt.-Ges. Absorption of ammonia, etc., from gases. 29,988. November 26.
- Carpmael, W., and I. G. Farbenindustrie Akt.-Ges. Apparatus for discharging liquids. 29,989. November 26.
- Carpmael, W., and I. G. Farbenindustrie Akt.-Ges. Manufacture of dyestuffs. 30,079. November 27.
- Chadder, W. J., and Thermal Industrial and Chemical (T.I.C.) Research Co., Ltd. Fractional distillation. 29,620. November 23.
- Coley, H. E. Apparatus for activating carbon, etc. 29,657. November 23.
- Coley, H. E. Manufacture of sulphides. 29,658. November 23.

- Coley, H. E. Reduction of ores, etc. 29,659, 29,660. November 23.
- Coley, H. E. Manufacture of zinc oxide. 29,838. November 25.
- Coley, H. E. Low-temperature carbonisation of coal. 29,839. November 25.
- Distillers Co., Ltd., and Peake, A. M. Production of organic acids, etc. 30,084. November 27.
- Dreyfus, H. Treatment of materials containing cellulose derivatives. 29,587, 29,588, 29,589. November 23.
- Dwight and Lloyd Metallurgical Co. and White, A. E. Treatment of carbonate materials. 29,998. November 26.
- Dwight and Lloyd Metallurgical Co. Apparatus for treating materials. 29,999. November 26. (United States, April 16.)
- Holliday and Co., Ltd., L. B., and Shaw, C. Dyestuffs. 29,897. November 26.
- Holliday and Co., Ltd., L. B., and Shaw, C. Manufacture of substituted quinones. 29,899. November 26.
- I. G. Farbenindustrie Akt.-Ges. Manufacture of monocarboxylic acids. 29,460. November 22. (Germany, November 27, 1925.)
- I. G. Farbenindustrie Akt.-Ges. Production of 1-diazoanthraquinone 2 carboxylic acids. 29,841. November 25. (Germany, November 28, 1925.)
- I. G. Farbenindustrie Akt.-Ges. Catalytic dehydrogenations. 29,842. November 25. (Germany, November 30, 1925.)
- I. G. Farbenindustrie Akt.-Ges. Dyestuffs. 29,843. November 25. (Germany, December 1, 1925.)
- Imray, O. Y., and Society of Chemical Industry in Basle. Manufacture of discharge printing pastes. 29,619. November 23.
- Liljenroth, F. G. Manures. 29,958. November 26. (Sweden, August 13.)
- Liljenroth, F. G. Oxidising ammonia. 29,959. November 26. (Sweden, August 19.)
- Lush, E. J., and Technical Research Works, Ltd. Hydrogenation of oxides of carbon. 29,950. November 26.
- Petersen, H. Manufacture of sulphuric acid. 29,797. November 25. (Germany, March 20.)
- Webb, H. Electrodeposition of metals. 30,027. November 27.

"Foreign Dyed" Goods

A SUGGESTION by the President of the Board of Trade that under the Merchandise Marks Bill there should be power to place the mark "Foreign Dyed" upon British cloth that has been sent abroad for dyeing, roused the opposition of Lancashire M.P.'s in the House of Commons. Their main objection is that such a procedure would be prejudicial to Lancashire goods.

Mr. Wiggins, M.P. for Oldham, endeavoured to have the bleaching, dyeing, and finishing of textile material excluded from the provisions of the Bill relating to British goods undergoing a substantial change by a manufacturing process abroad, but his amendment was defeated.

Sir Philip Cunliffe-Lister suggested that the question of marking such goods "Foreign Dyed" could be discussed when the Bill comes before the House of Lords. He took the view that neither the clothmaker nor the dyer would be likely to apply for an order under the Bill, and so there was nothing to argue about, but some of the Lancashire members were not convinced, and fear was expressed that attempts might be made to get the word "Foreign" stamped upon Lancashire goods finished abroad.

I.G. and German Varnish Industry

THE Commercial Secretary at Berlin (Mr. J. W. F. Thelwall) informs the Department of Overseas Trade that according to the *Berliner Tageblatt* of November 3 a convention has been concluded between the I.G. Farbenindustrie A.-G. and a number of cellulose varnish manufacturers for the purpose of a common price policy. By far the greatest part of the German varnish industry, which still manufactures oil varnishes, will remain outside this convention, which was originally to have taken a much wider form. It appears that until the completion of the new plant, the I.G. Farbenindustrie is not manufacturing enough cellulose for its own artificial silk and cellulose varnish production, although the Rheinisch-Westfälische Sprengstoff A.-G. delivers to it considerable quantities. The varnish production of the I.G. Farbenindustrie is only in its initial stages, but the I.G. is of the opinion that the modern varnish spraying processes for automobiles, etc., will assure a great future to the varnish industry, and it hopes to gain a hold on the German market before the Americans have penetrated too deeply.

Electrical Smoke Precipitation

A Resumé of Modern Methods

THE electrical precipitation of smoke and fume was the subject of a paper recently read by Mr. H. W. C. Henderson, A.R.C.S., A.I.C., before the members of the Bristol Section of the Society of Chemical Industry. The speaker said the problem of recovering smoke, dust, or fume from the waste gases from industrial processes was becoming more and more important, not only because of the pollution of the atmosphere which otherwise resulted, but on account of the great demand for efficiency made in all modern processes. Electrical precipitation consisted in subjecting the gases carrying the suspended matter to a silent slow discharge of electricity which took place between two opposing electrodes. The fine particles of smoke or fume coalesced and were precipitated on to the so-called collecting electrodes (which were earthed) through the action of the discharge electrodes, which were insulated electrically and maintained at a potential of about 60,000 volts by means of a special transformer unit. The first recorded attempt to apply the underlying principles of electrical precipitation industrially was made in 1885 at some lead works in North Wales. This followed pioneer experimental work by Sir Oliver Lodge, but because the apparatus available at that time was not adequate for the purpose the experiment proved unsuccessful.

To-day, with the practical experience derived from many years' work and from numerous plants which were in successful operation in all parts of the world, it was possible to design the correct size of plant to meet particular needs, and to obtain maximum efficiency. Numerous difficulties which were encountered had been overcome, and practically any fume could be dealt with. Plants were now successfully in operation for the collection of all kinds of dust and fumes—for example, metal bearing flue dust from lead; tin and copper smelters; iron blast furnace flue dust; alumina; dust from pyrites burners; tar fog; sulphuric acid mist, etc. Fractional precipitation could be employed for separating from a gas suspended constituents of varying condensation temperatures. Describing the predominant features of the process adopted by Lodge-Cottrell, Ltd., of Birmingham, who were operating electrical precipitation in this country and also in the Colonies, the lecturer said they were: (1) That the gases had an unrestricted gas passage through the apparatus, this causing no back pressure to hinder any others in their metallurgical workings; (2) no preliminary gas cooling was required, as gas could be treated by this method at any temperature between that of the atmosphere and 1,400° F.; (3) the power consumption and the maintenance costs were almost negligible, while the labour and attention required to operate even a large installation were very small.

Chemical Aspects of Geology

AT a recent joint meeting of the local sections of the Institute of Chemistry and the Society of Chemical Industry, at Edinburgh, Mr. J. Adam Watson, A.C.G.I., F.I.C., read a paper on "Some Chemical Aspects of Geology." The lecturer referred to the facilities which Scotland offered for the study of the earth's crust, Arthur's Seat itself being a capital hunting ground for the geologist. Co-operation between chemist and geologist was, however, essential for a proper understanding of the natural processes of rock formation, either by crystallisation from the molten material of the interior of the earth or by sedimentation following upon the weathering of the volcanic rocks. Laboratory experiments with molten minerals had thrown valuable light upon the crystallisation of quartz-bearing rocks, it being shown that the quartz, although of very high fusion point, might nevertheless be the last portion to separate from the lava. Radioactivity was of great importance in regard to theories of the earth's structure, because the heat developed by the radioactive substances would lead to definite changes in the crust of the earth. According to a recent theory cycles of changes would occur, which would result in the formation of new mountains and new seas, and would give to the earth a new face. According to this theory, the cycle took 40 million years, and at present we were living in a period of quiescence, with no prospect of any violent outbursts of activity for many thousands of years. The lecturer illustrated his remarks by lantern slides and diagrams and also exhibited specimens of rocks.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.
ACID BORIC, COMMERCIAL.—Crystal, £37 per ton; powder, £39 per ton.
ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity, strength, and locality.
ACID NITRIC, 80° Tw.—£21 10s. to £27 per ton, makers' works, according to district and quality.
ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations: 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.
AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.
BISULPHITE OF LIME.—£7 10s. per ton, packages extra, returnable.
BLEACHING POWDER.—Spot, £9 10s. per ton d/d; Contract, £8 10s. per ton d/d, 4-ton lots.
BORAX, COMMERCIAL.—Crystal, £23 per ton. Powder, £24 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)
CALCIUM CHLORIDE (SOLID).—£5 12s. 6d. to £5 17s. 6d. per ton d/d carr. paid.
COPPER SULPHATE.—£25 to £25 10s. per ton.
METHYLATED SPIRIT 61 O.P.—Industrial, 2s. 11d. to 3s. 4d. per gall.; pyrridinised industrial, 3s. 1d. to 3s. 6d. per gall.; mineralised, 4s. to 4s. 4d. per gall.; 64 O.P., 1d. extra in all cases; prices according to quantity.
NICKEL SULPHATE.—£38 per ton d/d.
NICKEL AMMONIA SULPHATE.—£38 per ton d/d.
POTASH CAUSTIC.—£30 to £33 per ton.
POTASSIUM BICHROMATE.—4½d. per lb.
POTASSIUM CHLORATE.—3½d. per lb., ex wharf, London, in cwt. kegs.
SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.
SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.
SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.
SODA CRYSTALS.—£5 to £5 5s. per ton ex railway depots or ports.
SODIUM ACETATE 97/98%.—£21 per ton.
SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.
SODIUM BICHROMATE.—3½d. per lb.
SODIUM BISULPHITE POWDER, 60/62%.—£17 per ton for home market, 1-cwt. iron drums included.
SODIUM CHLORATE.—2½d. per lb.
SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.
SODIUM PHOSPHATE.—£14 per ton, f.o.r. London, casks free.
SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.
SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.
SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.
SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.r. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—7d. to 7½d. per lb. Crude 60's, 1s. 8d. to 1s. 11d. per gall. Better demand.
ACID CRESYLIC 99/100.—2s. 6d. per gall. Steady. 97/99.—2s. to 2s. 9d. per gall. Pale, 95%, 1s. 10d. to 2s. 6d. per gall. Dark, 1s. 9d. to 2s. 3d. per gall.
ANTHRACENE.—A quality, 2½d. to 3d. per unit. 40%, 3d. per unit.
ANTHRACENE OIL, STRAINED.—8d. to 8½d. per gall. Unstrained, 7½d. to 8d. per gall.; both according to gravity.
BENZOL.—Crude 65's, 1s. 4d. to 1s. 5d. per gall., ex works in tank wagons. Standard Motor, 2s. to 2s. 3d. per gall., ex works in tank wagons. Pure, 2s. 3d. to 3s. per gall., ex works in tank wagons. Scarce and firm.
TOLUOL.—90%, 2s. to 3s. 3d. per gall. Firm. Pure, 2s. 3d. to 3s. 6d. per gall.
XYLOL.—2s. 3d. to 3s. per gall. Pure, 4s. per gall.
CREOSOTE.—Cresylic, 20/24%, 10½d. per gall. Standard specification, 6½d. to 9d.; middle oil, 7½d. to 8d. per gall. Heavy, 8½d. to 9d. per gall.
NAPHTHA.—Crude, 10d. to 1s. 1d. per gall. according to quality. Solvent 90/160, 2s. to 2s. 1d. per gall. Solvent 95/160, 2s. 1d. to 2s. 2d. per gall. Solvent 90/190, 1s. 3½d. to 1s. 4d. per gall.
NAPHTHALENE CRUDE.—Drained Creosote Salts, £4 10s. to £7 10s. per ton. Whizzed or hot pressed, £5 10s. to £8 10s. per ton.
NAPHTHALENE.—Crystals, £11 10s. to £12 10s. per ton. Quiet. Flaked, £12 10s. to £13 per ton, according to districts.
PITCH.—Medium soft, 182s. 6d. to 200s. per ton, according to district.
PYRIDINE.—90/140, 12s. to 17s. per gall. Nominal. Heavy, 7s. to 10s. per gall. 90/180, 9s. to 9s. 6d. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.
ACID ANTHRANILIC.—6s. 6d. per lb. 100%.
ACID BENZOIC.—1s. 9d. per lb.
ACID GAMMA.—8s. per lb.
ACID H.—3s. 3d. per lb. 100% basis d/d.
ACID NAPHTHIONIC.—2s. 2d. per lb. 100% basis d/d.
ACID NEVILLE AND WINTHER.—4s. 9d. per lb. 100% basis d/d.
ACID SULPHANILIC.—9d. per lb. 100% basis d/d.
ANILINE OIL.—9½d. per lb. naked at works.
ANILINE SALTS.—9½d. per lb. naked at works.
BENZALDEHYDE.—2s. 1d. per lb.
BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.
BENZOIC ACID.—1s. 8½d. per lb.
o-CRESOL 29/31° C.—4d. to 4½d. per lb.
m-CRESOL 98/100%.—2s. 3d. per lb.
p-CRESOL 32/34° C.—2s. 3d. per lb.
DICHLORANILINE.—2s. 3d. per lb.
DIMETHYLANILINE.—2s. per lb. d/d. Drums extra.
DINITROBENZENE.—9d. per lb. naked at works.
DINITROCHLOROBENZENE.—£84 per ton d/d.
DINITROTOLUENE.—48/50° C. 8d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.
DIPHENYLAMINE.—2s. 10d. per lb. d/d.
a-NAPHTHOL.—2s. per lb. d/d.
B-NAPHTHOL.—11d. to 1s. per lb. d/d.
a-NAPHTHYLAMINE.—1s. 3d. per lb. d/d.
B-NAPHTHYLAMINE.—3s. per lb. d/d.
o-NITRANILINE.—5s. 9d. per lb.
m-NITRANILINE.—3s. per lb. d/d.
p-NITRANILINE.—1s. 9d. per lb. d/d.
NITROBENZENE.—7d. per lb. naked at works.
NITRONAPHTHALENE.—10d. per lb. d/d.
R. SALT.—2s. 4d. per lb. 100% basis d/d.
SODIUM NAPHTHIONATE.—1s. 9d. per lb. 100% basis d/d.
o-TOLUIDINE.—9d. per lb. naked at works.
p-TOLUIDINE.—2s. 2d. per lb. naked at works.
m-XYLIDINE ACETATE.—2s. 11d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £9 10s. to £10 per ton. Scarce. Grey, £17 10s. per ton. Liquor, 9d. per gall. 32° Tw.
CHARCOAL.—£9 to £10 per ton and upwards, according to grade and locality. Very scarce and in better demand.
IRON LIQUOR.—1s. 6d. per gall. 32° Tw. 1s. 2d. per gall. 24° Tw.
RED LIQUOR.—9½d. to 1s. per gall.
WOOD CREOSOTE.—2s. 9d. per gall. Unrefined.
WOOD NAPHTHA, MISCIBLE.—3s. 10d. to 4s. per gall., 60% O.P. Solvent, 4s. 2d. to 4s. 3d. per gall., 40% O.P. Both scarce and in good demand.
WOOD TAR.—£3 to £5 per ton and upwards, according to grade.
BROWN SUGAR OF LEAD.—£41 10s. to £42 per ton. Fair market.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6d. to 1s. 5½d. per lb., according to quality, Crimson, 1s. 3d. to 1s. 7½d. per lb., according to quality.
ARSENIC SULPHIDE, YELLOW.—2s. per lb.
BARYTES.—£3 10s. to £6 15s. per ton, according to quality.
CADMIUM SULPHIDE.—2s. 9d. per lb.
CARBON BISULPHIDE.—£20 to £25 per ton, according to quantity.
CARBON BLACK.—5½d. per lb., ex wharf.
CARBON TETRACHLORIDE.—£46 to £55 per ton, according to quantity, drums extra.
CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.
DIPHENYLGUANIDINE.—3s. 9d. per lb.
INDIARUBBER SUBSTITUTES, WHITE AND DARK.—5½d. to 6½d. per lb.
LAMP BLACK.—£35 per ton, barrels free.
LEAD HYPOSULPHITE.—9d. per lb.
LITHOPONE, 30%.—£22 10s. per ton.
MINERAL RUBBER "RUBPRON".—£13 12s. 6d. per ton f.o.r. London.
SULPHUR.—£9 to £11 per ton, according to quality.
SULPHUR CHLORIDE.—4d. per lb., carboys extra.
SULPHUR PRECIP. B.P.—£47 10s. to £50 per ton.
THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb. carriage paid.
THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.
VERMILION, PALE OR DEEP.—5s. 3d. per lb.
ZINC SULPHIDE.—1s. 1d. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£38 to £39 per ton ex wharf London in glass containers.

ACID, ACETYL SALICYLIC.—2s. 4d. to 2s. 5d. per lb.

ACID, BENZOIC B.P.—2s. to 2s. 3d. per lb., according to quantity.

ACID, BORIC B.P.—Crystal, £43 per ton; powder, £47 per ton. Carriage paid any station in Great Britain, in ton lots.

ACID, CAMPHORIC.—19s. to 21s. per lb.

ACID, CITRIC.—1s. 3½d. per lb., less 5%.

ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.

ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d. per lb.

ACID, SALICYLIC, B.P.—1s. 4d. to 1s. 5½d. per lb. Firm and good inquiry. Technical.—1s. to 1s. 0½d. per lb.

ACID, TANNIC B.P.—2s. 9d. to 2s. 11d. per lb.

ACID, TARTARIC.—1s. 0½d. per lb., less 5%.

AMIDOL.—9s. 6d. per lb., d/d.

ACETANILIDE.—1s. 7d. to 1s. 8d. per lb. for quantities.

AMIDOPYRIN.—11s. 6d. per lb.

AMMONIUM BENZOATE.—3s. 3d. to 3s. 6d. per lb., according to quantity.

AMMONIUM CARBONATE B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimed; lump, 1s. per lb.; powder, 1s. 3d. per lb.

ASPIRIN.—2s. 4d. to 2s. 5d. per lb. Steady demand.

ATROPINE SULPHATE.—11s. per oz. for English make.

BARBITONE.—8s. 9d. per lb.

BENZONAPHTHOL.—3s. 3d. per lb. spot.

BISMUTH CARBONATE.—12s. 3d. to 14s. 3d. per lb.

BISMUTH CITRATE.—9s. 3d. to 11s. 3d. per lb.

BISMUTH SALICYLATE.—10s. to 12s. per lb.

BISMUTH SUBNITRATE.—10s. 6d. to 12s. 6d. per lb., all above bismuth salts, according to quantity.

BISMUTH NITRATE.—6s. 9d. per lb.

BISMUTH OXIDE.—13s. 9d. per lb.

BISMUTH SUBCHLORIDE.—11s. 9d. per lb.

BISMUTH SUBGALLATE.—9s. 9d. per lb.

BORAX B.P.—Crystal, £27 per ton; powder, £28 per ton. Carriage paid any station in Great Britain, in ton lots.

BROMIDES.—Potassium, 1s. 8d. to 1s. 11d. per lb.; sodium, 1s. 10d. to 2s. 2d. per lb.; ammonium, 2s. 1d. to 2s. 4d. per lb., all spot.

CALCIUM LACTATE.—1s. 4d. to 1s. 5d.

CHLORAL HYDRATE.—3s. 3d. to 3s. 6d. per lb., duty paid.

CHLOROFORM.—2s. 3d. to 2s. 7½d. per lb., according to quantity.

CREOSOTE CARBONATE.—6s. per lb.

FORMALDEHYDE.—£39 per ton, in barrels ex wharf.

GUAIACOL CARBONATE.—6s. 6d. to 7s. per lb.

HEXAMINE.—2s. 4d. to 2s. 6d. per lb.

HOMATROPINE HYDROBROMIDE.—30s. per oz.

HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.

HYDROGEN PEROXIDE (12 VOLTS).—1s. 8d. per gallon f.o.r. makers' works, naked.

HYDROQUINONE.—4s. per lb., in cwt. lots.

HYPOPHOSPHITES.—Calcium, 3s. 6d. per lb., for 28-lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.

IRON AMMONIUM CITRATE B.P.—2s. 1d. to 2s. 4d. per lb. Green, 2s. 4d. to 2s. 9d. per lb. U.S.P., 2s. 2d. to 2s. 5d. per lb.

IRON PERCHLORIDE.—22s. per cwt., 112 lb. lots.

MAGNESIUM CARBONATE.—Light Commercial, £33 per ton net.

MAGNESIUM OXIDE.—Light Commercial, £67 10s. per ton, less 2½%; Heavy Commercial, £22 per ton, less 2½%; Heavy Pure, 2s. to 2s. 3d. per lb., according to quantity.

MENTHOL.—A.B.R. recrystallised B.P., 18s. 9d. per lb. net; Synthetic, 10s. 6d. to 12s. per lb., according to quantity; Liquid (95%), 12s. per lb.; Detached Cryst., 15s. per lb.

MERCURIALS.—Red Oxide, 6s. 5d. to 6s. 7d. per lb., levig., 5s. 11d. to 6s. 1d. per lb.; Corrosive Sublimate, Lump, 4s. 8d. to 4s. 10d. per lb., Powder, 4s. 1d. to 4s. 3d. per lb.; White Precipitate, 4s. 10d. to 5s. per lb., Powder, 4s. 11d. to 5s. 1d. per lb., Extra Fine, 5s. 1d. to 5s. 2d. per lb.; Calomel, 5s. 3d. to 5s. 5d. per lb.; Yellow Oxide, 5s. 10d. to 5s. 11d. per lb.; Persulph, B.P.C., 5s. 1d. to 5s. 2d. per lb.; Sulph. nig., 4s. 10d. to 4s. 11d. per lb.

METHYL SALICYLATE.—1s. 6d. to 1s. 9d. per lb.

METHYL SULPHONAL.—15s. 6d. per lb.

METOL.—11s. per lb. British make.

PARAFORMALDEHYDE.—1s. 9d. per lb. for 100% powder.

PARALDEHYDE.—1s. 1d. to 1s. 4d. per lb., in carboys or bottles respectively.

PHENACETIN.—3s. 9d. to 4s. per lb.

PHENAZONE.—5s. 9d. to 6s. per lb.

PHENOLPHTHALEIN.—3s. 9d. to 4s. per lb.

POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—81s. per cwt., less 2½% for ton lots.

POTASSIUM CITRATE.—1s. 11d. to 2s. 2d. per lb.

POTASSIUM FERRICYANIDE.—1s. 9d. per lb., in cwt. lots.

POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb., according to quantity.

POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included, f.o.r. London.

POTASSIUM PERMANGANATE.—B.P. crystals, 6½d. per lb., spot.

QUININE SULPHATE.—2s. per oz., 1s. 8d. to 1s. 9d. per oz. in 100 oz. tins.

RESORCIN.—4s. to 4s. 3d. per lb., spot.

SACCHARIN.—55s. per lb. Seasonal trade falling off.

SALOL.—3s. to 3s. 3d. per lb. Firmer.

SODIUM BENZOATE, B.P.—1s. 10d. to 2s. 2d. per lb.

SODIUM CITRATE, B.P.C., 1911.—1s. 8d. to 1s. 11d. per lb. B.P.C., 1923.—2s. 1d. to 2s. 2d. per lb. U.S.P., 1s. 11d. to 2s. 2d. per lb., according to quantity.

SODIUM FERROCYANIDE.—4d. per lb. carriage paid.

SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 5s. per ton, d/d consignee's station in 1-cwt. kegs.

SODIUM NITROPRUSSIDE.—16s. per lb.

SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—80s. to 85s. per cwt., according to quantity.

SODIUM SALICYLATE.—Powder, 1s. 10d. to 1s. 11d. per lb. Crystal, 1s. 11d. to 2s. per lb.

SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 2d. per lb.

SODIUM SULPHITE, ANHYDROUS, £27 10s. to £28 10s. per ton, according to quantity; 1-cwt. kegs included.

SULPHONAL.—10s. 6d. per lb.

TARTAR EMETIC, B.P.—Crystal or powder, 2s. to 2s. 2d. per lb.

THYMOL.—13s. to 14s. 3d. per lb., according to quantity.

Perfumery Chemicals

ACETOPHENONE.—10s. per lb.

AUBEPINE (EX ANETHOL).—12s. per lb.

AMYL ACETATE.—2s. per lb.

AMYL BUTYRATE.—5s. 6d. per lb.

AMYL SALICYLATE.—3s. per lb.

ANETHOL (M.P. 21/22° C.).—6s. per lb.

BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—2s. 3d. per lb.

BENZYL ALCOHOL FREE FROM CHLORINE.—2s. 3d. per lb.

BENZALDEHYDE FREE FROM CHLORINE.—2s. 9d. per lb.

BENZYL BENZOATE.—2s. 6d. per lb.

CINNAMIC ALDEHYDE NATURAL.—18s. per lb.

COUMARIN.—11s. per lb.

CITRONELLOL.—15s. per lb.

CITRAL.—9s. 6d. per lb.

ETHYL CINNAMATE.—10s. per lb.

ETHYL PHTHALATE.—3s. per lb.

EUGENOL.—10s. per lb.

GERANIOL (PALMAROSA).—19s. per lb.

GERANIOL.—6s. 3d. to 10s. 6d. per lb.

HELIOTROPINE.—4s. 10d. per lb.

ISO EUGENOL.—13s. 6d. per lb.

LINALOL.—Ex Shui Oil, 12s. per lb. Ex Bois de Rose, 17s. per lb.

LINALYL ACETATE.—Ex Shui Oil, 15s. per lb. Ex Bois de Rose, 18s. 6d. per lb.

METHYL ANTHRANILATE.—9s. 3d. per lb.

METHYL BENZOATE.—4s. 6d. per lb.

MUSK KETONE.—36s. per lb.

MUSK XYLOL.—8s. 6d. per lb.

NEROLIN.—3s. 9d. per lb.

PHENYL ETHYL ACETATE.—12s. per lb.

PHENYL ETHYL ALCOHOL.—10s. per lb.

RHODINOL.—28s. 6d. per lb.

SAFROL.—1s. 6d. per lb.

TERPINEOL.—1s. 6d. per lb.

VANILLIN.—18s. 6d. to 19s. 6d. per lb.

Essential Oils

ALMOND OIL.—11s. 6d. per lb.

ANISE OIL.—3s. 6d. per lb.

BERGAMOT OIL.—31s. 6d. per lb.

BOURBON GERANIUM OIL.—12s. per lb.

CAMPOR OIL.—63s. 6d. per cwt.

CANANGA OIL, JAVA.—20s. per lb.

CINNAMON OIL, LEAF.—5½d. per oz.

CASSIA OIL, 80/85%.—8s. 9d. per lb.

CITRONELLA OIL.—Java, 85/90%, 2s. 4d. per lb. Ceylon, pure, 2s. 1d. per lb.

CLOVE OIL.—6s. 9d. per lb.

EUCALYPTUS OIL, 70/75%.—2s. per lb.

LAVENDER OIL.—French 38/40%, Esters, 21s. per lb.

LEMON OIL.—9s. per lb.

LEMONGRASS OIL.—4s. 6d. per lb.

ORANGE OIL, SWEET.—9s. 9d. per lb.

OTTO OF ROSE OIL.—Bulgarian, 70s. per oz. Anatolian, 30s. per oz.

PALMA ROSA OIL.—9s. 9d. per lb.

PEPPERMINT OIL.—Wayne County, 28s. 6d. per lb. Japanese, 9s. 6d. per lb.

PETITGRAIN OIL.—8s. 3d. per lb.

SANDALWOOD OIL.—Mysore, 26s. per lb. Australian, 17s. 3d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.

London, December 2, 1926.

DEMAND has shown a distinct tendency to broaden during the current week, while the inquiry is also distinctly better; this is doubtless due to the improvement in the industrial situation and no doubt will lead to a definite increase in business before very long.

Prices on the whole continue extremely firm and steady, and there are few changes to report.

General Chemicals

ACETONE is a poor market, with little demand at £65 per ton.
ACID ACETIC is unchanged in value, and demand is active, particularly for export.
ACID CITRIC is stagnant and the price is nominally 1s. 2½d. to 1s. 3½d. per lb.
ACID FORMIC has been more active and is quoted at £44 to £45 per ton, according to quantity.
ACID LACTIC continues quietly steady at £45 per ton for 50% by weight.
ACID OXALIC meets with an improved demand and is quoted at 3½d. per lb.
ACID TARTARIC is being quoted at 11½d. per lb., and this price can be shaded for quantities.
ALUMINA SULPHATE is in fair request at £5 10s. for 17-18%.
AMMONIUM CHLORIDE continues quiet and price is unchanged at £18 10s. per ton.
BARIUM CHLORIDE is only in moderate demand and the market stands at £9 10s. to £9 15s. per ton, ex store.
COPPER SULPHATE.—There is a good amount of inquiry for forward position, and the price is very firm at £25 per ton.
CREAM OF TARTAR is somewhat higher, and the price is now quoted at £75 to £76 per ton.
EPSOM SALTS is unchanged at £5 10s. per ton, and the demand is good.
FORMALDEHYDE is inclined to be scarce, and the material is quoted at £42 to £43 per ton.
LEAD ACETATE continues active, and the spot quotation is £44 to £45 per ton for white, with brown at £2 per ton less.
METHYL ACETONE is much firmer and is quoted at £57 to £58 per ton; demand good.

Latest Oil Prices

LONDON.—LINSEED OIL quiet and occasionally 2s. 6d. lower. Spot, £31 10s., ex mill: November, £30 5s.; December, £30 10s.; January to April, £30 15s.; May to August, £30 10s. RAPE OIL inactive. Crude extracted, £45; technical refined, £47, ex wharf. COTTON OIL quiet. Refined common edible, £38; Egyptian, crude, £31 10s.; deodorised, £40. TURPENTINE firm but slow. American, spot, 61s. 9d.; January to April and May to June, 63s. per cwt.

HULL.—LINSEED OIL.—Spot to January to April, £31 5s.; May to August, £31. COTTON OIL.—Naked Bombay crude, £30 10s.; Egyptian crude, £31; edible refined, £35; technical, £34 10s. PALM KERNEL OIL.—Crushed naked, 5½ per cent., £39. GROUND NUT OIL.—Crushed/extracted, £43; deodorised, £47. SOYA OIL.—Extracted and crushed, £35; deodorised, £38 10s. RAPE OIL.—Crude extracted, £45 10s.; refined, £47 10s. per ton, net cash terms, ex mill. CASTOR OIL and COD OIL unchanged.

Nitrogen Products

Export.—On account of the prolongation of the coal stoppage the quantities available at British ports have been very small. These have been sold on the basis of £11 5s. per ton, f.o.b. U.K. port, in single bags. As the home consuming season becomes nearer, British producers will have smaller quantities available for export. As a consequence, the bulk of the foreign export trade will be taken by continental producers. It appears that the further quantities available for export from the United States will be very small. It is expected that large further sales will be made by continental producers for shipment to the Far East and for despatch to neighbouring countries.

Home.—According to information recently received, it appears that there will be sufficient supplies available in the country to meet the home demand. On account of the lower prices for sulphate and the larger margin in the parity of sulphate and nitrate prices, a heavier home demand must be anticipated. In some districts buyers have become anxious and are covering their requirements. Home bookings up to time of going to press must be considerably in excess of those of last year.

Nitrate of Soda.—The nitrate position continues to improve. America reports a good move out of nitrate from ports to consuming points. The difficulties attendant upon the arrangement of freights

METHYL ALCOHOL is only a nominal market, the present quotation being £46 to £48 per ton.

POTASSIUM CHLORATE is steady at 3½d. per lb.

POTASSIUM PERMANGANATE is steady at 7½d. per lb. for B.P. material.

POTASSIUM PRUSSATE is extremely firm and is quoted at 7½d. per lb., with an upward tendency; demand is good.

SODIUM ACETATE is quiet, but the price holds at £20 per ton.

SODIUM BICHROMATE is fairly active, and British makers' price is unchanged.

SODIUM CHLORATE is quietly steady at 3½d. to 3¾d. per lb.

SODIUM NITRITE is unchanged at £20 per ton.

SODIUM PHOSPHATE is firm and the price is unchanged at £13 5s. to £14 per ton, according to quantity.

SODIUM PRUSSATE is in somewhat better request and the price is firm at 4½d. per lb.

SODIUM SULPHIDE is higher and makers are well occupied with orders.

ZINC SULPHATE is quietly steady and in fair request at £14 per ton.

Coal Tar Products

There is no great change to report in the market for coal tar products from last week.

90's BENZOL is quoted at 2s. 1d. per gallon on rails, while the motor quality is quoted at 1s. 11½d. to 2s. per gallon.

PURE BENZOL is worth from 3s. 9d. to 4s. per gallon.

CREOSOTE OIL is unchanged, at 7½d. to 8d. per gallon on rails in the country, while the price in London is from 8½d. to 9d. per gallon at works.

CRESYLIC ACID is quoted at 2s. 2d. per gallon on rails for the pale quality 97/99%, while the dark quality 95/97% is worth 2s. 1d. per gallon.

SOLVENT NAPHTHA is worth about 1s. 10d. per gallon on rails.

HEAVY NAPHTHA is unchanged at 1s. 6d. to 1s. 7d. per gallon on rails.

NAPHTHALENES are also unchanged, the 76/78 quality being quoted at £8 10s. to £9 per ton, while the 74/76 quality is worth about £8 to £8 5s. per ton, at makers' works.

PITCH remains fairly steady with a tendency to weakness.

from Chile has led to the disposal of considerable stocks in Europe and in Egypt. Although sales made by the Producers' Association are still about 900,000 tons below those at this time last year, it is anticipated that the figure will be considerably reduced when the consuming season is at hand. The spot price in Europe per cwt. c.i.f. is 11s. 7½d., and the Chilean price per metric quintal remains at 19s. 6d.

Calcium Cyanamide

APART from the monthly increase of 2s., bringing the price of calcium cyanamide to £9 10s. per ton, carriage paid in 4-ton lots to any railway station in Great Britain, there is no change in the cyanamide market. There is a moderate inquiry for immediate and forward deliveries.

League of Nations and Poison Gas

THE Report of the League of Nations Joint Disarmament Committee relating to poison gases has just been issued. It records the fact that factories normally and legitimately employed for chemical purposes, including dyeworks, can be quickly adapted to manufacture poison gases for war purposes. Five eminent British, French, German, Italian, and American chemists consulted stated that no time would be required for adaptation in the case of poison gases which were at present produced in large quantities in industry, especially chlorine and phosgene. These chemists declared that it did not appear to be possible, generally speaking, to prevent the manufacture of the poisonous gases at present manufactured in industry. Such gases were the current products of industry, or were intermediate agents indispensable for obtaining other products, and it was absolutely impossible to consider their suppression. It might, perhaps, be possible to institute between the industries in the different countries agreements which would be sanctioned by the States concerned and would provide more particularly for the rationing of manufacture. Such agreements would cover both the nature of the products and the quantities manufactured. They would make it possible, at the same time, to exercise stricter supervision as regards prohibition to manufacture certain products which appear to be of use only for military purposes. The committee desired to point out the expediency of abolishing all subsidies, both to official laboratories and to private institutions, whose object it was to promote researches in the matter of poison gases for purely military purposes.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.

Glasgow, December 1, 1926.

BUSINESS in the heavy chemical market has already shown more activity than for some little time, inquiry being good both for home and export trade.

The only change in price of any importance to record is an increase of about £4 per ton in the German Syndicate price for solid caustic potash, the liquid quality being increased by about £2 per ton.

Industrial Chemicals

ACID ACETIC, 98/100%.—£55 to £67 per ton, according to quality and packing, c.i.f. U.K. ports; 80% pure, £37 to £38 per ton; 80% technical, £37 to £38 per ton, c.i.f. U.K. ports.

ACID BORIC.—Crystal, granulated or small flakes, £37 per ton. Powdered, £39 per ton, packed in bags, carriage paid U.K. stations.

ACID CARBOLIC, ICE CRYSTALS.—In good demand and price unchanged at 7½d. per lb., delivered or f.o.b. U.K. ports.

ACID CITRIC, B.P. CRYSTALS.—Unchanged at 1s. 3d. per lb., less 5%, ex store, with demand poor. Quoted 1s. 2½d. per lb., less 5%, ex wharf, prompt shipment from the Continent.

ACID HYDROCHLORIC.—In little demand. Price 6s. 6d. per carboy, ex works.

ACID NITRIC, 80°.—Usual steady demand and price unchanged at £23 5s. per ton, ex station, full truck loads.

ACID OXALIC, 98/100%.—Spot material quoted 3½d. per lb., ex store. Offered from the Continent at 3½d. per lb., c.i.f. U.K. ports.

ACID SULPHURIC, 144°.—£12s. 6d. per ton; 168°, £7 per ton, ex works, full truck loads. Dearsenicated quality, 20s. per ton more.

ACID TARTARIC, B.P. CRYSTALS.—Quoted 11½d. per lb., less 5%, ex store, spot delivery. Offered for prompt shipment at about 11½d. per lb., less 5%, ex wharf.

ALUMINA SULPHATE, 17/18%, IRON FREE.—Spot material on offer at about £6 per ton, ex store. Quoted £5 8s. 6d. per ton, c.i.f. U.K. ports. Prompt shipment from the Continent.

ALUM, LUMP POTASH.—Spot material unchanged at £9 per ton, ex store. Offered from the Continent at about £7 15s. per ton, c.i.f. U.K. port. Crystal powdered quality, £7 10s. per ton, c.i.f. U.K. ports. Spot material about £8 5s. per ton, ex store.

AMMONIA ANHYDROUS.—Imported material selling at about 11½d. to 11½d. per lb., ex wharf, containers extra and returnable.

AMMONIA CARBONATE.—Lump, £37 per ton; powdered, £39 per ton, packed in 5 cwt. casks, delivered or f.o.b. U.K. ports.

AMMONIA LIQUID, 880°.—Unchanged at about 2½d. to 3d. per lb. delivered, according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture quoted £23 10s. to £25 10s. per ton, ex station. Continental on offer at about £21 10s. per ton, c.i.f. U.K. ports. Fine white crystals of Continental manufacture quoted £18 15s. per ton, c.i.f. U.K. ports.

ARSENIC, WHITE POWDERED CORNISH.—Supplies for spot delivery still small. Quoted £18 15s. per ton, ex wharf, for prompt despatch from mines. Spot material on offer at £19 10s. per ton, ex store.

BARIUM CARBONATE, 98/100%.—White powdered quality quoted £6 15s. per ton, c.i.f. U.K. ports.

BARIUM CHLORIDE, 98/100%.—Quoted £7 15s. per ton, c.i.f. U.K. ports, prompt shipment from the Continent. Spot material available at about £9 10s. per ton, ex store.

BARYTES.—English material unchanged at £5 5s. per ton, ex works. Continental quoted £5 per ton, c.i.f. U.K. ports.

BLEACHING POWDER.—English material unchanged at £9 10s. per ton, ex station; contracts 20s. per ton less. Continental now quoted £7 15s. per ton, c.i.f. U.K. ports.

BORAX.—Granulated, £22 10s. per ton; crystals, £23 per ton; powdered, £24 per ton, carriage paid U.K. stations.

CALCIUM CHLORIDE.—English manufacturers' price unchanged at £5 12s. 6d. to £5 17s. 6d. per ton, ex station. Continental on offer at £3 12s. 6d. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works or at £4 12s. 6d. per ton, f.o.b. U.K. ports, for export.

COPPER SULPHATE.—English material unchanged at about £23 5s. per ton, f.o.b. U.K. ports. Continental on offer at £22 10s. per ton, ex wharf.

FORMALDEHYDE, 40%.—Spot material on offer at £40 per ton, ex store. Quoted £38 per ton, c.i.f. U.K. ports, prompt shipment.

GLAUBER SALTS.—English material quoted £4 per ton, ex store or station. Continental on offer at about £2 15s. per ton, c.i.f. U.K. ports.

LEAD, RED.—Imported material quoted £37 per ton, ex store.

LEAD, WHITE.—Quoted £37 10s. per ton, ex store.

LEAD, ACETATE.—In rather poor demand. White crystals now quoted £44 per ton, ex store, spot delivery. Offered from the Continent at £43 per ton, c.i.f. U.K. ports. Brown quoted £41 per ton, spot delivery.

MAGNESITE GROUND CALCINED.—Quoted £8 10s. per ton, ex store; in moderate demand.

POTASH CAUSTIC, 88/92%.—Syndicate price advanced to £29 15s. per ton, c.i.f. U.K. ports, minimum 15 ton lots. Liquid 50° now quoted £14 per ton, c.i.f. U.K. ports.

POTASSIUM BICHROMATE.—Unchanged at 4½d. per lb., delivered.

POTASSIUM CARBONATE, 96/98%.—Quoted £25 5s. per ton, ex wharf, early delivery. Spot material on offer at £26 10s. per ton, ex store; 90/94% quality quoted £22 5s. per ton, c.i.f. U.K. ports.

POTASSIUM CHLORATE, 98/100%.—Powdered quality available at about £25 5s. per ton, c.i.f. U.K. ports. Crystal £2 per ton extra.

POTASSIUM NITRATE (SALTPETRE).—Quoted £22 per ton, c.i.f. U.K. ports. Prompt shipment from the Continent. Spot material about £24 per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—On offer at 7d. per lb., ex store, spot delivery. Quoted 6½d. per lb., ex wharf, early shipment.

POTASSIUM PRUSSIAN, YELLOW.—Spot material available at 7½d. per lb., ex store. Quoted 7d. per lb., ex wharf, prompt shipment from the Continent.

SODA CAUSTIC.—76-77% at £17 10s. per ton; 70-72%, £16 2s. 6d. per ton. Broken, 60%, £16 12s. 6d. per ton. Powdered, 98-99%, £20 17s. 6d. per ton. All carriage paid U.K. stations, spot delivery. Contracts 20s. per ton less.

SODIUM ACETATE.—English material quoted £22 10s. per ton, ex store. Continental on offer at about £19 per ton, c.i.f. U.K. ports.

SODIUM BICARBONATE.—Refined recrystallised quality, £10 10s. per ton, ex quay or station. M.W. quality 30s. per ton less.

SODIUM BICHROMATE.—English price unchanged at 3½d. per lb., delivered.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station; powdered or pea quality, £1 7s. 6d. per ton more (alkali, 59%), £8 12s. 3d. per ton, ex quay or station.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £9 per ton, ex station; minimum, 4-ton lots; pea crystals, photographic quality, £14 10s. per ton, ex store, spot delivery. Continental commercial crystals quoted £8 15s. per ton, ex store.

SODIUM NITRATE.—Ordinary quality quoted about £12 12s. 6d. per ton, ex store. Refined quality 5s. per ton extra.

SODIUM NITRITE, 100%.—£21 5s. per ton, ex store, spot delivery.

SODIUM PRUSSIAN (YELLOW).—In good demand. Spot material quoted 4½d. per lb., ex store. Offered for prompt shipment at 4½d. per lb., ex wharf.

SODIUM SULPHATE (SALTCAKE).—Prices for home consumption, £3 10s. per ton, ex works. Good inquiry for export and higher prices obtainable.

SODIUM SULPHIDE, 60-62%.—Solid, £13 5s. per ton; broken, £14 5s. per ton; flake, £15 5s. per ton; crystals, £11-13 34%. £8 12s. 3d. per ton. All delivered buyers' works U.K.; minimum 5-ton lots, with slight reduction for contracts; 60-62%, solid quality, offered from the Continent at about £8 15s. per ton, c.i.f. U.K. ports. Broken quality 15s. per ton more. Crystals, 30-32%, about £6 10s. per ton, c.i.f. U.K. ports.

SULPHUR.—Flowers, £11 15s. per ton; roll, £10 10s. per ton; rock, £10 10s. per ton; floristella, £10 per ton; ground American, £9 5s. per ton. Ex store, spot delivery. Prices nominal.

ZINC CHLORIDE.—British material, 98-100%, quoted £24 15s. per ton, f.o.b. U.K. ports; 98-100%, solid, on offer from the Continent at about £21 15s. per ton, c.i.f. U.K. ports; powdered, 20s. per ton extra.

ZINC SULPHATE.—Continental make on offer at about £11 per ton, ex wharf.

NOTE.—The above prices are for bulk business, and are not to be taken as applicable to small parcels.

Coal Tar Intermediates

DIMETHYLANILINE.—2s. per lb. Small inquiries.

ALPHA NAPHTHYLAMINE.—1s. 3d. per lb. Some inquiries.

CLEVES ACID.—2s. 3d. per lb. Some inquiries.

Manchester Chemical Market

(FROM OUR OWN CORRESPONDENT.)

Manchester, December 2, 1926.

CONSIDERING the circumstances there has been a very fair inquiry for next year's contract deliveries, although, needless to say, it falls much short of what is regarded as normal on this market. Current demand remains moderate, both from home users and for export, and so far the improvement in the industrial conditions has not been reflected in the demand for heavy chemicals, consumers for the most part still buying with the object of satisfying near requirements. Steadiness, however, is the prevailing note here, with a firmer tendency where supplies have been interfered with on account of the coal stoppage.

Heavy Chemicals

Nitrite of soda continues to be quoted at £19 15s. to £19 10s. per ton, the demand for this material being on a moderate scale. There is not much movement, however, in the case of saltcake and glauber salts, which are offering at £3 5s. and £3 15s. per ton respectively. Hyposulphite of soda is rather quiet, but values show little alteration on the week, photographic keeping steady at £15 10s. per ton and the commercial kind at about £9 5s. Bleaching powder is in moderate demand and prices are held at £8 10s. per ton. The call for caustic soda is about maintained and quotations are firm at from £15 2s. 6d. per ton for 60 per cent. strength to £17 10s. per ton for 76 per cent. There is no alteration in the price level of bicarbonate of soda, which is on offer at £10 10s. per ton, but sales of this are still relatively slow. Sulphide of sodium is a quiet section, with 60-65 per cent. concentrated solid quoted at £9 10s. to £10 per ton and commercial quality at £7 5s. for imported material. Prussiate of soda continues firm at 4½d. to 4¼d. per lb., supplies of this still being on the short side. Phosphate of soda is rather quiet, but values are steady and unchanged at round £13 per ton. Alkali is firm at £6 15s. per ton and fair quantities are being disposed of. Chlorate of soda is slow at 3d. per lb., this being one of the easy sections of the market. Bichromate of soda is in fair demand, and as offers are not excessive prices are fully maintained at 3½d. to 3¼d. per lb.

There is relatively little buying interest in permanganate of potash at the moment, and values lack strength, B.P. quality now being quoted at about 6¼d. per lb. and commercial at 5d. or a shade under. Bichromate of potash continues firm on comparative scarcity at round 4½d. per lb. Supplies of yellow prussiate of potash also remain scarce and quotations have advanced to about 7¼d. per lb. and continue firm. Caustic potash is in quiet demand with prices steady at round £27 5s. per ton for the solid material. Chlorate of potash is attracting limited attention at from 3½d. to 3¼d. per lb. In the case of carbonate of potash there has been little or no change in the position, and prices remain at about £26 5s. per ton.

Acetate of lead is in slow demand, but prices keep steady at £45 10s. per ton for the white material and £41 to £42 per ton for the brown. Nitrate of lead is in limited request, but there has been little alteration, about £40 10s. per ton being an average value to-day. White acetate of lime keeps steady and unchanged at £17 to £17 10s. per ton, but brown is rather dearer again at about £9. Arsenic remains firm and meets with some inquiry; white powdered, Cornish makes, is quoted at about £16 10s. per ton at the mines. Sulphate of copper is well held at round £23 15s. per ton f.o.b., a fair demand for this material being reported.

Acids and Tar Products

There is not much business passing in citric acid and values are easy at 1s. 3½d. per lb., although little changed from last week. Tartaric acid is fairly steady at 11¼d. per lb., and a quiet demand is met with. Acetic acid is steady and in fair request at £66 per ton for glacial quality and £37 to £38 for 80 per cent. commercial. Oxalic acid is attracting a fair amount of attention at 3½d. to 3¼d. per lb.

The by-products continue in short supply generally, and, except in pitch, there has been little change in prices so far. For pitch f.o.b. prices now vary from £8 to £8 5s. per ton, with inquiry less active. Creosote oil keeps steady at 8½d. to 8¼d. per gal. Solvent naphtha is only in moderate demand at 1s. 10d. to 1s. 11d. per gal. Carbohc acid crystals are scarce and firm at 7d. to 7¼d. per lb.

Chemistry and National Welfare

Address by Professor McBain

IN a recent address to the members of the Bristol Rotary Club, Professor J. W. McBain, F.R.S., who is leaving England to take up an important appointment at Stanford University, California, said that chemistry was essentially creative. Four of the chief subjects with which chemistry had to deal were raw materials, energy, food, and health, and in all of these chemistry was opening up vistas of great and unsuspected resources. Chemistry was fabricating the raw materials of food, clothing, and shelter from such materials as air, water, fuel, and vegetation. Germany was converting 600,000 tons of nitrogen from the air every year into agricultural fertilisers corresponding to over three million tons of ammonium sulphate.

A nation whose chemists could supply its essential need for liquid fuel need not send out its armies to fight for it. Germany was already nearly independent in this respect, and in the British Empire we had the statement of Mr. Kerr Thomas that in the province of Alberta there was enough brown coal to supply the world with petrol for the next thousand years. The cheapest way of transporting energy was, however, in the form of manufactured goods. It was cheaper to send the manufactured goods than to transmit electrical power over long distances. Health was one of the most important directions in which chemistry served. Our increasing knowledge of nutrition could add years to the average life of peoples, and the conquest of disease was proceeding apace.

He had tried to look into the future from the broad angle of humanity, rather than from the cramped view of the laboratory. Chemistry promised some freedom from the dominance of material things. The point he had tried to indicate was that a particular kind of knowledge and ability might form an immense economic and social resource of a nation, and that the activities of the chemist might convert national liabilities into international assets. The subjects that had attracted him had been the rather neglected phenomena of daily life and the ordinary problems that confronted us, which was practically a virgin field, because what was everyone's business was no one's business.

A New Use for Helium

Interesting Results Obtained in America

As the result of experimental work by the United States Navy Department, Public Health Service, and Bureau of Mines, the use of helium in helium-oxygen mixtures for "decompression," or restoration to normal atmospheric conditions, of divers and others performing work under increased atmospheric pressure, by preventing caisson disease, promises to extend greatly the time and depth of underwater operations by divers, and thus to enlarge the whole range of submarine engineering. The employment of such artificial atmospheres is given much credit for the successful salvaging of the hull of the U.S. submarine S.51, accidentally sunk near Newport, Rhode Island, by the steamer *City of Rome*. If helium can be made available at comparatively low cost, it is considered that the possibilities of using such synthetic atmospheres for divers during their entire time under pressure are almost unlimited, and that diving hazards will be reduced almost to a minimum. Rather recently the Bureau of Mines became interested in pressure and caisson work, and as a result started investigations at its Pittsburgh experimental station. After a large number of experiments had been made on animals it was found that by replacing the nitrogen of the air with helium, and also reducing the oxygen content below that of normal air, an atmosphere could be made that would permit decompression in one-third to one-fourth the time required for air and also that the deleterious effects from oxygen poisoning could be prevented. The advantage of helium is that it is only about half as soluble as nitrogen and thereby greatly reduces the amount of excess gas that a man will accumulate while under pressure, and that will have to be given off under decompression. Also, because the helium molecule is smaller than nitrogen, it will diffuse more rapidly, and the escape of the excess gas will be facilitated. The quantity of oxygen is controlled within the amounts which will not cause deleterious effects, yet be sufficient for performing work.

Company News

CASTNER-KELLNER ALKALI CO.—A final dividend of 14 per cent., payable on December 3, is announced, making 22 per cent. for the year. The amount to be carried forward is £18,936, against £28,008 last year.

BRITISH OXYGEN CO.—The directors have declared an interim dividend on account of the year ending March 31, 1927, of 6d. per share, equivalent to 2½ per cent., less income tax at 4s. in the £, to all shareholders registered in the books on November 25.

CASSEL CYANIDE CO.—The report for the year to September 30 last shows a net profit, including £18,329 brought forward, of £71,363, leaving, after deducting the interim payment, £53,738. The directors recommend a final dividend of 6d. per share, requiring £35,250, and carrying forward £11,488.

MAJOR AND CO.—The net profits for the year ended March 31 were £15,102 and £12,462 was brought forward. It is proposed to pay the dividends on the 6 per cent. and 8½ per cent. cumulative preference shares, but the directors regret that they do not see their way to recommend payments of dividends on the preferred ordinary and ordinary shares. The balance to be carried forward is £16,062.

BLEACHERS' ASSOCIATION, LTD.—An interim dividend of 4d. per share, less tax, on the ordinary shares is announced, as against 1s. per share last year. The directors state that the lower rate is due to the stoppage in the coal trade. In consequence of this stoppage the company has had to face during five of the six months under review both heavy increases in working expenditure and a considerable diminution in trade, with consequent adverse effects on the trading account. The directors regret that the same combination of circumstances is still affecting the trading account of the present six months.

TATE AND LYLE, LTD.—A dividend of 6 per cent., less tax, is recommended on the ordinary shares for the year ended September 30, 1926. Last year there was a total distribution of 13½ per cent., of which 4 per cent. was paid as an interim, whereas in the year under review no interim was paid. The accounts showed a net profit of £359,505, which, added to the balance brought forward of £52,733, makes an available total of £412,238. A sum of £90,000 is transferred and £100,000 is placed to general reserve, leaving £52,018 to be carried forward.

Tariff Changes

GREECE.—The export of 2½ million okes of olive oil from Greece was authorised in June. The Commercial Secretary to H.M. Legation at Athens reports that this quantity has now been exported, but that the export of a further quantity of 1 million okes of oil from Mitylene has been authorised. This further quantity will not be subject to the payment of the additional export tax of 3.80 drachmæ per oke formerly imposed, only the normal export duty of 24 per cent. *ad valorem* being leviable.

URUGUAY.—The Uruguayan *Diario Oficial* for October 2 contains a decree providing for the immediate revision of the tariff valuations in the case of goods falling under the sections of the tariff relating to chemical products. The revised valuations of these goods are to be drawn up by the middle of December.

TUNIS.—The *Journal Officiel Tunisien* for October 9 contains two decrees dated September 10 and 24, which prohibit the export from Tunis, except under licence, of chloride of potassium and sulphate of potash extracted from the soil, and compound fertilisers containing chloride of potassium or sulphate of potash in a proportion representing at least 7 per cent. of pure potash. The prohibition also extends to re-exports, but does not apply to exports to France and Algeria.

Export of Pitch—Order Revoked

THE Board of Trade on November 25 issued an order revoking the Pitch (Emergency: Prohibition of Export) Order, 1926. In consequence, the exportation of pitch from the United Kingdom is no longer subject to licence.

New Chemical Trade Marks

Applications for Registration

This list has been specially compiled for us by Mr. H. T. P. Gee, Patent and Trade Mark Agent, Staple House, 51 and 52, Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks and Designs.

Opposition to the Registration of the following Trade Marks can be lodged up to December 17, 1926.

"TILLIT."

473,399. For composite glue. Class 1. Carlton Robert Teasdale Hutchings, 42, Popes Lane, South Ealing, London, W.5; glue manufacturers. September 28, 1926.

"LEVIATHAN."

473,532. For paints and varnishes. Class 1. Thelwall and Co., Ltd., Triumph Works, Air Street, Hull; oil, paint and varnish manufacturers. October 2, 1926.

"PIXIE."

473,633. For dyes. Class 1. James Hall and Co. (Edinburgh), Ltd., 133, George Street, Edinburgh, manufacturers. October 6, 1926. (To be associated. Sect. 24.)

473,634. Dyes. Class 4.

"CHROMINE."

474,037. For a chemical solution for use in motor car radiators to prevent freezing. Class 1. The Pyrene Co., Ltd., 9, Grosvenor Gardens, London, S.W.1; manufacturers. October 20, 1926.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

AGENT'S SERVICES OFFERED.—A business man shortly proceeding to Australia desires to take with him the representation of British manufacturers of goods suitable for the Australian market, either for New South Wales or for the whole of Australia. Replies should be addressed to the Commercial Bureau, Australia House, Strand, W.C.2, quoting reference 408.

PAINTS AND VARNISHES, PATENT MEDICINES, ETC.—An Indian firm with headquarters at Jamnagar and branches at Bombay and Karachi desire to secure the representation of British manufacturers of paints and varnishes, patent medicines, etc. (Reference No. 633.)

AMMONIA, BENZOL, NAPHTHALENE, CARBOLIC ACID, SULPHURIC ACID, SALICYLIC ACID, CREOSOTE, ASPHALTE, PITCH, GUM, RESIN, MENTHOL, GLYCERINE, TURPENTINE, PARAFFIN, CRUDE RUBBER AND MEDICAL OILS.—An agent in Buda-Pesth desires to secure the representation on a commission basis of British manufacturers or exporters of the above. (Reference No. 645.)

CALCIUM CARBIDE.—The Anatolian Railway Administration is calling for tenders for the supply of 20,000 kgs. of calcium carbide. Tenders, in sealed envelopes, must reach the Direction Générale, Chemins de Fer d'Anatolie-Bagdad, Constantinople, by December 25, 1926. Firms desirous of offering calcium carbide of British manufacture can obtain further details upon application to the Department of Overseas Trade, 35, Old Queen Street, London, S.W.1. (Reference B.X. 3065.)

PAINTS, ETC.—A recommended firm in Port-au-Prince, Hayti, desires to obtain the agencies of British firms for the sale of paints, etc., for use in tropical climates. (Reference No. 650.)

Dyestuffs Industry Development Committee

THE Board of Trade have appointed Mr. C. J. T. Cronshaw, of the British Dyestuffs Corporation, Ltd., to be a member of the Dyestuffs Industry Development Committee set up under the Dyestuffs (Import Regulation) Act, 1920, in place of Dr. A. T. de Moulpiéd, resigned.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]

FLOROGEN CO., LTD., 47, Meadow Road, South Lambeth, manufacturing perfumiers. (C.C., 4/12/26.) £23 8s. 6d. October 12.

GIBBS OIL PRODUCTS, LTD., Marshall Works, Roe-buck Street, West Bromwich, oil merchants and chemists. (C.C., 4/12/26.) £28 3s. 10d. October 14.

JONES (EVAN), SON AND CO., LTD., 66, New Road, Llanelly, wholesale chemists. (C.C., 4/12/26.) £42 12s. 8d. October 26.

Mortgages and Charges

[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]

HAY (G. S.) AND CO., LTD., London, S.W., manufacturing chemists. (M., 4/12/26.) Registered November 16, £5,000 debentures (filed under Section 93 (3) of the Companies (Consolidation) Act, 1908), present issue £3,000; general charge.

SQUIRE (J. H.), LTD., Manchester, manufacturing chemists. (M., 4/12/26.) Registered November 15, £300 mortgages, to H. S. Sleight, 15, Hyde Road, Denton, solicitor; charged on 282, Regent Road, Salford. *Nil. June 25, 1925.

Satisfaction

WILKINSON AND NEWSHOLME, LTD., Otley, dyers, finishers, etc. (M.S., 4/12/26.) Satisfaction registered November 23, £8,000, registered June 12 and September 11, 1907.

Receivership

ROBIN HOOD OXIDE AND IRON CO., LTD. (R., 4/12/26.) E. W. Rowe, of 20, Copthall Avenue, E.C., Accountant, was appointed receiver on November 22, 1926, under powers contained in debentures dated November 3, 1922, to January 12, 1926.

London Gazette, &c.

Company Winding Up Voluntarily

BRUMFITT (R.) AND CO., LTD. (C.W.U.V., 4/12/26.) J. Lund, City Chambers, 2, Darley Street, Bradford, Incorporated Accountant, appointed liquidator, November 17.

Bankruptcy Information

EDGE, Sidney Norman Ramsey, 31, Market Street, Manchester, trading as S. WAREGE AND CO, chemical merchant and agent. First meeting, December 9, 3 p.m., Official Receiver's Offices, Byrom Street, Manchester. Public Examination, January 14, 1927, 10 a.m., Court House, Quay Street, Manchester.

Partnerships Dissolved

LONES (JOSEPH) (Joseph LONES and Victor Scotthorn GEORGE), analytical chemists, 41, Vicarage Road, Smethwick, Staffs, as from November 20, 1926, by mutual consent. Debts paid and received by J. Lones, who will continue the business.

STOTT AND HOTOPE (Augustus Parker STOTT and Hugo Max Norman HOTOPE, 165, City Road, London, dyestuffs and chemical merchants, by mutual consent as from March 31, 1926. Debts received and paid by A. P. Stott, by whom the business will be carried on.

New Companies Registered

SICHEL ADHESIVES, LTD., 119-125, Finsbury Pavement, London, E.C.2.—Registered November 26. Nom. capital, £7,500 in £1 shares. To carry on the business of manufacturers of and dealers in adhesives, chemical, industrial, and other preparations and articles, compounds, cements, oils, colours, pigments, paints, varnishes, dyeware, colloidal preparations, etc. A director: O. K. A. Hagedorn, 107, Highbury Quadrant, London, N.5.

THE BRITISH AND COLONIAL BAUXITE CO., LTD.—Registered as a "public" company on November 26. Nom. capital, £20,000 in £1 shares (15,000 "A" and 5,000 "B"). To enter into a lease of deposits of bauxite, to acquire licences to prospect for bauxite in British Guiana, to make surveys, borings, and quarries and sink pits, and to carry on the business of miners, workers, winners and refiners of metals, minerals and ores, manufacturers of metals, metal and mineral products and chemicals, etc. A subscriber: F. W. Cowham, 308, Hither Green Lane, Lewisham, London.

W. THOMPSON, LTD., 17, Back Murton Street, Sunderland.—Registered November 27. Nom. capital, £2,000 in £1 shares. To carry on the business of manufacturing chemists, manufacturers of and dealers in chemicals of all kinds, essential oils, etc. Directors: W. Thompson, Roker Farm Cottage, Roker, Sunderland, and J. Exley.

ANGUS R. WALBROOK AND CO., LTD.—Registered November 27. Nom. capital, £10,000 in £1 shares (4,000 10 per cent. cumulative preference and 6,000 ordinary). To acquire the business carried on at 97, Tanner Street, Bermondsey, as "Angus R. Walbrook and Co.," and to carry on the business of manufacturers of and dealers in colours, paints, varnishes, japans, enamels, dyes, pigments, white lead, petrol, and other spirits, oils, oil substitutes, etc. A subscriber: A. R. Walbrook, The Homestead, Kenley, Surrey.

WHITE LAC, LTD., Locksley Street, Limehouse, London, E.—Registered as a "private" company on November 29. Nom. capital, £25,000 in 24,990 cumulative preference shares of £1 each and 200 ordinary shares of 1s. each. To acquire the business of manufacturers of white lac substances of a resinous nature and chemicals, dealers in all kinds of shellac, white lac, gums, glues, and general drysaltery, including fine and heavy chemicals, and shellac bleaching and refining merchants lately carried on by the Albion Shellac Co., Ltd., and Shellac Bleachers, Ltd., and to adopt an agreement with the said two companies. Directors: N. F. Kingsett, Karridale, West Byfleet, Surrey; F. M. Wells; A. Richmond, Grenell Lodge, Sutton, Surrey.

A SUGAR BEET FACTORY will, according to arrangements just completed, be erected near Selby. The buildings will occupy about seventy acres on the East Riding side of the River Ouse, and will cost about half a million pounds. Two thousand acres of land have been secured from farmers for beet-growing.

NOBEL CHEMICAL FINISHES, LTD., who published a daily paper during the Motor Show entitled "The Belco Bulletin," announce that the prize winners of the competition which was organised in connection with the publication, were: First prize (£5), Mr. W. O. Prest, 35, Clifton Street, Lytham, Lancashire, the Secretary of the Automobile Spraying Co., Ltd., St. Annes-on-Sea; second prize (£3), Mr. F. W. Cooper, 35, Smith Terrace, King's Road, Chelsea, London, foreman of the paint department of Hooper and Co., Ltd., and an instructor of the coach painting classes at the Regent Street Polytechnic, London; third prize (£2), Mr. H. Hylton, The Cott, Lee Road, Lincoln, proprietor of Hylton and Son, one of the Belco authorised refinishing stations.

PROFESSOR A. R. LING (Brewing and Bio-Chemical Department of the University of Birmingham) presided over a representative attendance on Tuesday, November 23, at the opening meeting of the session of the Birmingham and Midland Section of the Society of Chemical Industry at the University of Birmingham. The contributions were: (1) "Pregl's Method of Micro-Analysis," by H. D. K. Drew, D.Sc.; (2) "The Action of Hydrogen Chloride upon Methyl Alcohol," by S. R. Carter, M.Sc., and N. J. L. Megson, M.Sc.; and (3) "The Chemical Action of *p*-Quinones on Proteins and other Substances," by E. Ashley Cooper and Sydney D. Nicholas. Dr. Drew indicated the rapid advance in the application of micro-analytical methods, and pointed out that the new processes seemed destined shortly to displace the prevailing chemical methods of analysis.

